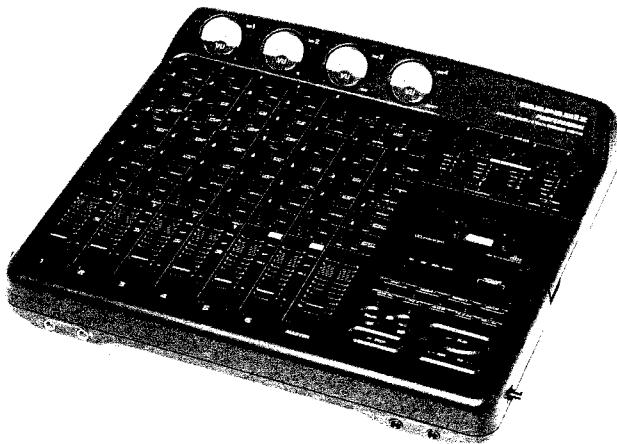


# Service Manual

74 PMD740 / 00B/02B/07B

6 Channel mixer/4 Track recoder

For repair information of the cassette mechanism  
see Service Manual of "Recorders tape deck"  
NMZ-3110DH-2



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**model PMD740**

First issue : 1993

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## MARANTZ DESIGN AND SERVICE

Using superior design and selected high grade components, MARANTZ company has created the ultimate in stereo sound. Only original MARANTZ parts can insure that your MARANTZ product will continue to perform to the specifications for which it is famous.

Parts for your MARANTZ equipment are generally available at our National Marantz Subsidiary or Agent.

MARANTZ EUROPE B.V.  
P.O. Box 80002  
Building SFF 2  
5600 JB Eindhoven  
The Netherlands  
Phone : +31-40-732241  
Fax : +31-40-735578

### ORDERING PARTS

Parts can be ordered either by mail or by telex. In both cases, the correct part number has to be specified. The following information must be supplied to eliminate delays in processing your order:

1. Complete address
2. Complete part numbers and quantities required
3. Description of parts
4. Model number for which the part is required
5. Way of shipment
6. Signature: any order form or telex must be signed, otherwise such part order will be considered as null and void.

### ADDRESSES

AUSTRALIA  
MARANTZ AUSTRALIA  
Figtree Drive  
Australia Centre  
Homebush, NSW 2140  
AUSTRALIA

FINLAND  
MARANTZ  
Kuortanegatan 1  
00520  
Helsingfors 52  
Finland

ITALY  
MARANTZ ITALIANA SPA  
Piazza IV Novembre 3  
20124 Milano  
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NORWAY  
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Postboks 7034  
Assiden  
3007 Drammen  
Norway

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Martinez Villergas 2  
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France

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Sagamihara-shi, Kanagawa  
Japan

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211-2 Esq.  
1200 Lisboa  
Portugal

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Box 1324  
17125 Solna  
Sweden

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The Netherlands

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Halle-Westfalen  
Germany

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AL ALAMIAH ELECTRONICS  
P.O.Box 8196  
Salmiah  
22052 Kuwait

SAUDI ARABIA  
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P.O.Box 5954  
University Street  
Riyadh 11432  
Saudi Arabia

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Av. Santa Maria 0760  
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Kingsbridge House  
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10 Bond Street  
Randburg 2194  
P.O. Box 7703  
Johannesburg 2000  
South Africa

TRADING  
MARANTZ TRADING  
P.O.Box 20008  
Building SFF 2  
5600 JB Eindhoven  
The Netherlands

DENMARK  
MARANTZ  
Horsvinget 5  
2630 Tastrup  
Denmark

GREECE  
ADAMCO ELECTR. SA  
P.O.Box 21025  
Hippocrates Str. 188  
Athens 11471  
Greece

All of the above locations are fully equipped to take care of your total service needs or can advice you. Because various countries have differing configuration requirements, it is necessary that you contact the service facility in your particular country. In the event that there is no service location listed for your country, please contact the nearest facility for the necessary assistance.

In case of difficulties, do not hesitate to contact the Technical Department at above mentioned address.

## 1. SPECIFICATIONS AND SERVICE DATA

### MECHANICAL CHARACTERISTICS

|                                |   |
|--------------------------------|---|
| Tape                           | C-60 and C-90 type for CrO <sub>2</sub> only (70 µs EQ) |
| Track Format                   | 4-track, 4-channel                                      |
| Head Configuration             | 4-channel record/playback (permalloy) x 1               |
|                                | 4-channel erase (ferrite) x 1                           |
| Motor                          | DC servo motor x 1                                      |
| Tape Speed                     | Normal 4.8cm/sec ±1%<br>High 9.5cm/sec ±1%              |
| Pinch Control                  | ±10%  |
| Fast Wind Time                 | Approx. 110 seconds for C-60                            |
| Maximum Dimensions (W x H x D) | 438 x 98 x 384 mm                                       |
| Weight                         | 4.2 kg  |

### ELECTRICAL CHARACTERISTICS

|                                     |                                 |
|-------------------------------------|---------------------------------|
| Mic/Line Input (x 6)                |                                 |
| Source Impedance                    | Less than 10k ohms              |
| Input Impedance                     | 50k ohms                        |
| Nominal Input Level                 | -50 dBV (3 mV) ~ -10 dBV (0.3V) |
| Minimum Input Level                 | -60 dBV (1 mV) Trim Max.        |
| Maximum Input Level                 | +6 dBV (2.0V) Trim Min.         |
| Insert (x 4) Send (Clip)            |                                 |
| Output Impedance                    | 100 ohms                        |
| Nominal Load Impedance              | 10k ohms                        |
| Minimum Load Impedance              | 2k ohms                         |
| Nominal Output Level                | -10 dBV (0.3V)                  |
| Insert (x 4) Receive (Ring)         |                                 |
| Input Impedance                     | 50k ohms                        |
| Nominal Input Level                 | -10 dBV (0.3V)                  |
| Stereo Line Input                   |                                 |
| Input Impedance (XLR)               | 50k ohms (600 ohms)             |
| Nominal Input Level                 | -10 dBV (0.3V)                  |
| Effect/Return (Ring)                |                                 |
| Input Impedance                     | 5k ohms (MONO), 10k ohms (L, R) |
| Nominal Input Level                 | -10 dBV                         |
| Line Output (2)/Effect Output (x 1) |                                 |
| Output Impedance                    | 100 ohms                        |
| Nominal Load Impedance              | 10k ohms                        |
| Minimum Load Impedance              | 2k ohms                         |
| Nominal Output Level                | -10 dBV (0.3V)                  |
| Headphone Output (Stereo x 2)       |                                 |
| Nominal Load Impedance              | 8 ohms                          |
| Maximum Output Level                | 100 mW + 100 mW (8 ohms)        |
| Equalizer (Shelving Type)           |                                 |
| Low Frequency Range                 | 100 Hz                          |
| High Frequency Range                | 10 kHz                          |
| Middle Frequency Range              | 200 Hz ~ 5.4 kHz                |
| Range                               | ±12 dB                          |

### RECORDER SECTION

|   |                                     |
|---|-------------------------------------|
| Tape Output (x 4)/Tape Cue Output (x 1) |                                     |
| Output Impedance                        | 150 ohms                            |
| Nominal Load Impedance                  | 10k ohms                            |
| Minimum Load Impedance                  | 2k ohms                             |
| Nominal Output Level                    | -10 dBV (0.3V)                      |
| Sync Input                              |                                     |
| Input Impedance                         | 22k ohms                            |
| Nominal Input Level                     | -10 dBV (0.3V)                      |
| Sync Output                             |                                     |
| Output Impedance                        | 100 ohms                            |
| Nominal Load Impedance                  | 10k ohms                            |
| Minimum Load Impedance                  | 2k ohms                             |
| Nominal Output Level                    | -10 dBV (0.3V)                      |
| Power Supply                            |                                     |
|   | AC120V 60 Hz<br>(with DA740PMDU)    |
|   | AC100V 50/60 Hz<br>(with DA740PMDF) |
|   | AC230V 50 Hz<br>(with DA740PMDN)    |
| Power Consumption                       | AC 9.5W                             |
| Accessories                             | AC Adaptor, DA740PMD                |

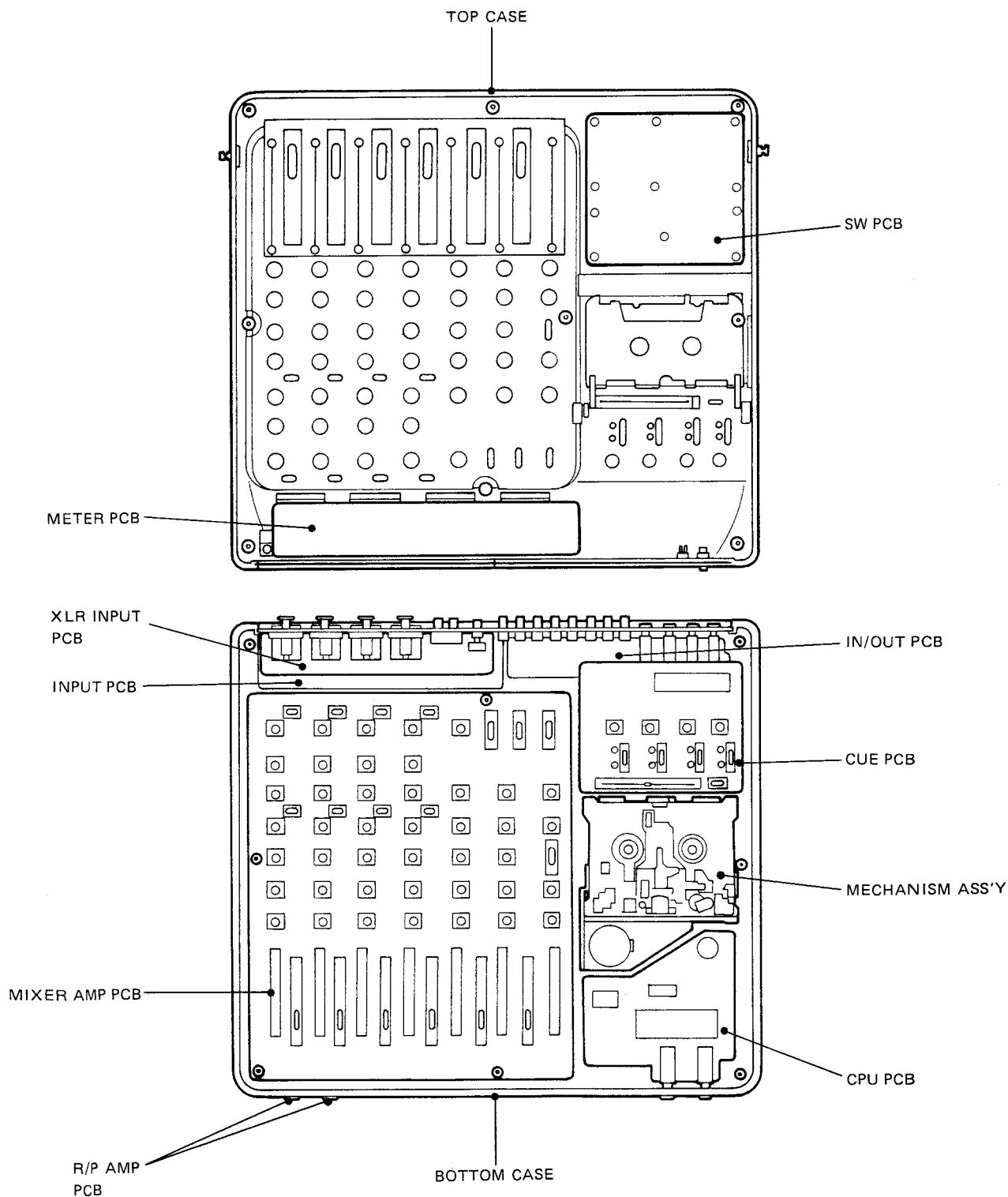
### SERVICE DATA

|                            |   |
|----------------------------|---|
| Tape Speed                 |   |
| Speed Deviation            | Normal 3000 Hz ± 45 Hz<br>High 6000 Hz ± 90 Hz              |
| Speed Variation Range      | Within 30 Hz  |
| Pitch Control              |   |
| Minimum                    | Normal 2700Hz High 5400Hz                                   |
| Maximum                    | Normal 3300Hz High 6600Hz                                   |
| Rewind Torque              |   |
| Playback, Record           | 35 ~ 75g-cm   |
| F.FWD, REW                 | 70 ~ 160 g-cm   |
| Pinch Roller Pressure      | 300 ~ 500g  |
| Wow & Flutter              | 0.15% (NAB weighted)<br>±0.15% peak (DIN/IEC/ANSI weighted) |
| Overall Frequency Response | Refer to 10-10  |
| Overall Distortion         | Refer to 10-11  |
| Overall S/N Ratio          | Refer to 10-12  |
| Erasing Ratio              | More than 65 dB   |

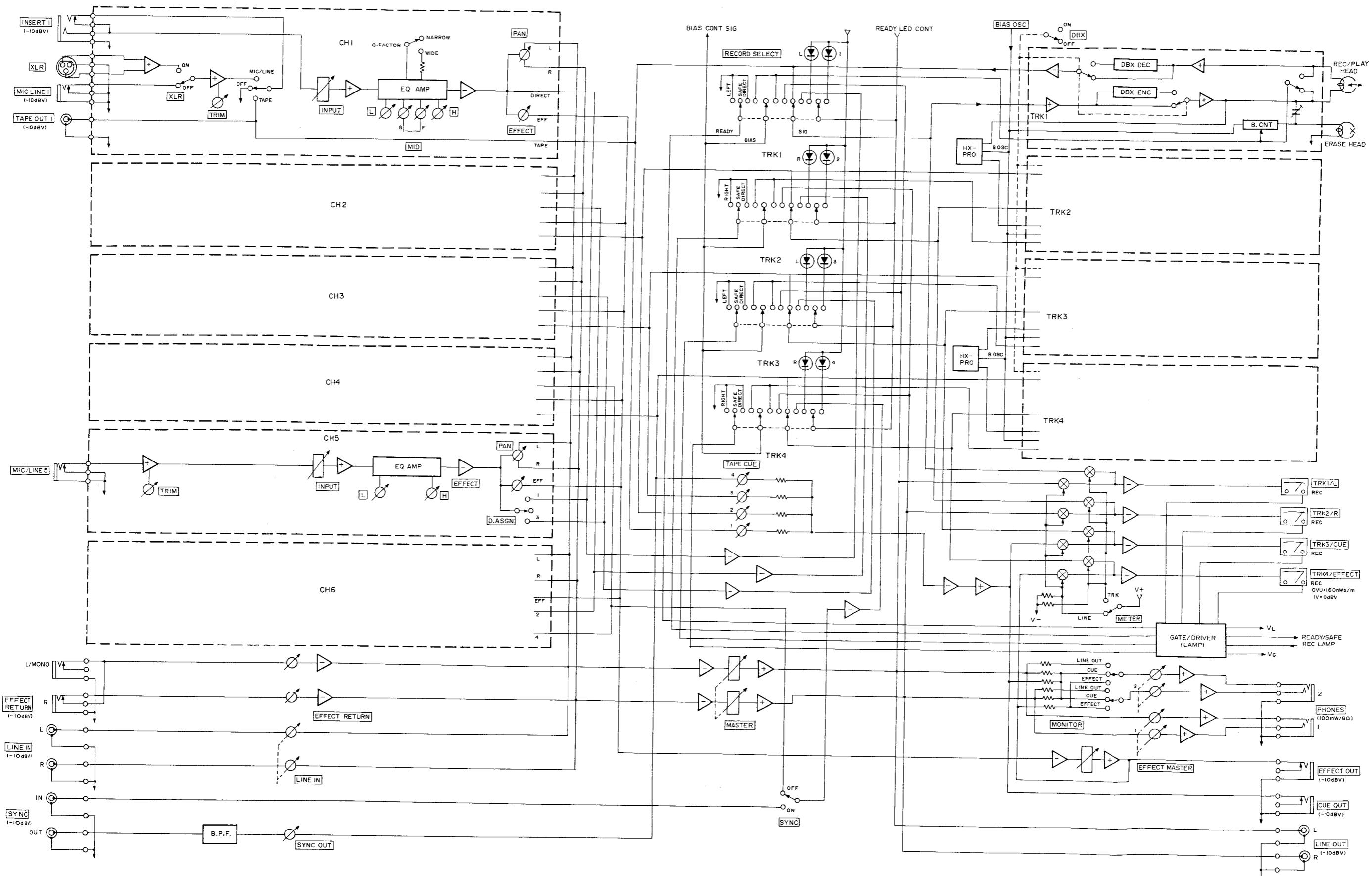
### NOTES:

- In these specifications, 0 dBV is referenced to 1.0 Volt. Actual voltage levels are also given in parenthesis (0.316V for -10 dBV is rounded off and given as 0.3V).
  - Changes in specifications and features may be made without notice or obligation.
- dbx Noise Reduction system made under license from dbx, Incorporated. The name "dbx" and the dbx symbol are trademarks of dbx, Incorporated.

## 2. PARTS LOCATIONS



### 3. BLOCK DIAGRAM



#### 4. CIRCUIT DESCRIPTION

##### OUTLINE

- 1) This model is basically a six-channel mixer and a four-track cassette recorder which are internally connected for easy editing works such as ping-pong recording, over-dubbing, etc.
- 2) Fig. 3-1 is a block diagram showing overall schematic configuration.
- 3) To clearly understand signal flowing routines in the circuit, following signal routines are assumed as an example.
  - a) An input signal (A) enters from MIC/LINE 1 with the track 1 set to the REC mode and a playback signal (B) is played back with the track 3 set to the PLAY mode.
  - b) When the PAN knobs for the channel 1 and the channel 3 are set to L, the signals (A) and (B) are mixed in the bus line circuit following the circuit and output from LINE OUT L. The mixed signal are recorded on the track 1 side. When the PAN knob is set to R, the signal are output from LINE OUT R and recorded on the track 2 side.
  - c) The LINE OUT output signal, the record source signal, and playback signal can be monitored with meter, headphone, and TAPE CUE OUT etc.
  - d) A SYNC signal (c) is recorded and played back on the track 4.
  - e) There are DIRECT assign function, INSERT terminals (CH1~CH4), EFFECT RETURN input terminal, and EFFECT OUT etc.

#### 5. TEST EQUIPMENT/MATERIAL

| Instruments (Specifications) |  | Usage  |
|------------------------------|--|--|
| Wow & flutter meter          | General model.<br>Range: 0.03% or more<br>Sensitivity: 10 mV or better<br>Characteristics: JIS, NAB, DIN/CCIR, WTD/UNWTD       | Wow & flutter measurement.   |
| Frequency counter            | General model.<br>Sensitivity: 25 mV or better<br>Impedance: 1 megohm or more<br>Frequency range: 1 Hz to 10 MHz               | Tape speed measurement,<br>Wow & flutter measurement,<br>Bias oscillation frequency measurement. |
| DC voltmeter                 | General model.<br>Digital or analog.<br>Sensitivity 0.1V or better   | DC voltage measurement of DBX amp, etc.  |
| AC level meter               | General model.<br>Range: -80 dB to +40 dB<br>Impedance: 1 megohm or more, 25 pF or less<br>Frequency band: 30 kHz or more      | Signal level measurement, bias adjustment.   |
| Audio oscillator             | Frequencies: 10 MHz to 1 MHz<br>Output level: 3V or more/<br>600-ohm (variable)<br>Distortion: No more than 0.1%               | Input signal supply.   |
| Attenuator                   | General model.<br>Attenuation: 100 dB or more<br>Step: 0.1 dB<br>Impedance: 600 ohms   | Input signal level setting.  |
| Oscilloscope                 | General model.<br>Sensitivity 20 mV/div. or better<br>Sweep rate: 1 $\mu$ sec./div. or better                                  | Head azimuth adjustment.   |
| Distortion meter             | General model.<br>Frequencies: 400 Hz, 1 kHz<br>Sensitivity: 10 mV or better<br>Measuring range: 0.1% or better                | Output signal distortion measurement.  |
| Band-pass filter             | General model.<br>Bandwidth: 1 kHz ( $\pm 10\%$ ), 30 dB or more/oct.<br>Bandwidth adjustment: Weighting network, IHF standard | Erasure effect measurement, crosstalk measurement.   |
| Test tapes                   | TCC-111 4.75 cm/sec.<br>TCC-211 9.5 cm/s   | Tape speed measurement, wow & flutter measurement.   |
|                              | TCC-120 A-bex<br>TCC-130 A-bex<br>TCC-142 A-bex  | Level (315 Hz/0 dB)<br>Level (Dolby B type), distortion (200 nWb/m).                             |
|                              | TCC-261B A-bex   | DIN reference level 31.5 Hz to 14 kHz, head azimuth and frequency response adjustments.          |
|                              | AC-513 3180 & 70 $\mu$ s Type II TDK HI-BIAS<br>TCC-203B Type II A-bex   | Blank tape (Chrome position).  |
|                              | TCC-903 t=9 $\mu$ A-bex  | Mirror tape (for tape transport adjustment)  |
|                              | TCC-194 A-bex  | Crosstalk measurement, Separation measurement.   |
|                              | TCC-152 (8 kHz) A-bex  | Azimuth adjustment.  |
|                              | TCC-284N   | Frequency response adjustment (spot).  |
|                              | THG-801C<br>THG-802  | Head gauge<br>Guide gauge  |

#### 6. MEASUREMENT CONDITIONS FOR MAINTENANCE

- 1) **Power Supply Voltage**  
Powered from AC adaptor (DA740PMD): within AC rating voltage  $\pm 5\%$ .
- 2) **Reference Voltage 0 dBV = 1.0V**  
Reference line input level: -10 dBV (316 mV)  
Reference output level: -10 dBV (316 mV)
- 3) Unless otherwise noted, the output load should be 10k ohms.
- 4) The output impedance of the audio oscillator supplying a signal to the MIC/LINE jack(s) should be 600 ohms or less.
- 5) Before proceeding performance checks and alignments for playback and record operations, clean and erase the tape running pathes.

#### 7. REMOVAL OF MAJOR PARTS

Sometimes it is difficult to see how to disassemble the parts. The following explains how to remove the major parts.

##### 7-1 TOP CASE AND BOTTOM CASE

- 1) Remove the rotary VR knob (47 psc) and the slide VR knob (8 pcs).
- 2) Remove the nine screws securing the bottom case. (Fig. 7-1)

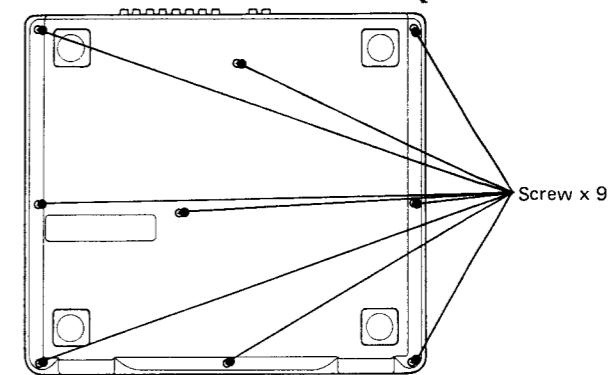


Fig. 7-1 Bottom Case Mounting Screws

##### 7-2 MECHANISM ASS'Y

Remove the top case and pull off the six screws holding the mechanism assembly mounted on the bottom case. (Fig. 7-2)

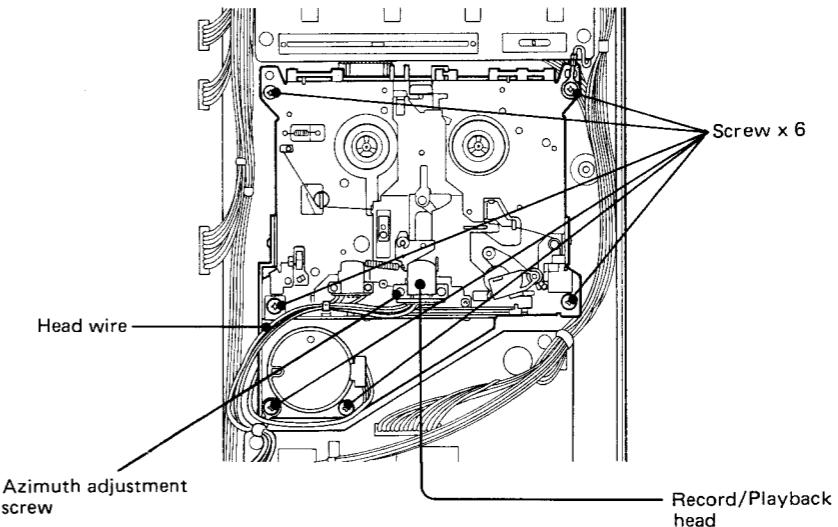


Fig. 7-2 Mechanism Assy

## 8. MECHANICAL CHECKS AND ADJUSTMENT

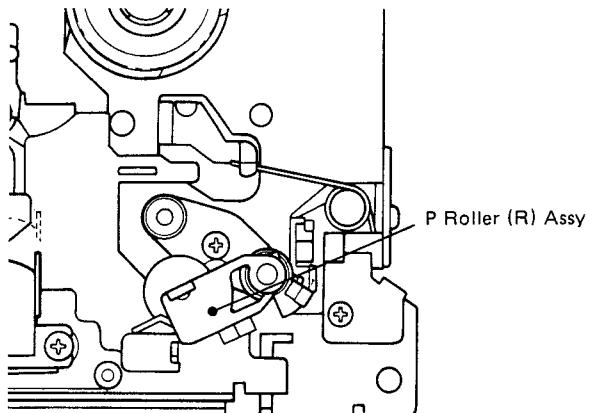


Fig. 8-1 Pinch Roller Pressure

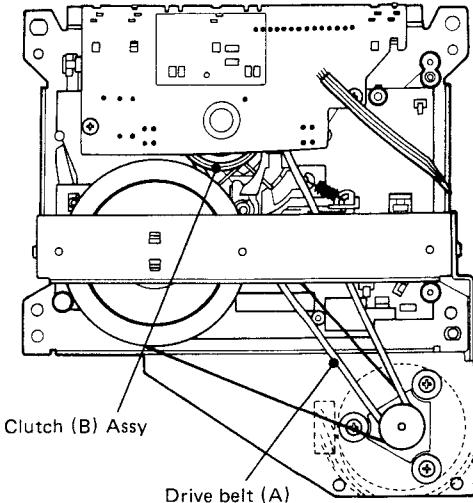


Fig. 8-2 Mechanism Assy PART

### 8.1 PINCH ROLLER PRESSURE

First remove the top case as shown in section 7-1.

- 1) Run the deck in PLAY mode and hook a tension gauge to the pinch roller (R) Assy.
- 2) Pull the gauge slowly and read the gauge when the pinch roller just stops rotating: The reading should be between 300 and 500g.

### 8.2 TAKE-UP TORQUE

Take-Up Torque for Reproducing and Recording

- 1) Load a cassette torque meter instead of a cassette tape in the cassette holder, and run the deck in PLAY mode. The meter reading should be:  
35 to 75 g-cm for Take-up torque (right reel table)  
2 to 6 g-cm for Back Tension torque (left reel table)
- 2) If the meter reading of the take-up torque is out of limits, remove the poli-slider washer set on the top of the take-up reel table (right) shaft and change the right reel table.
- 3) If the meter reading of the back tension torque is out of the limits, change the springs under the supplying reel table (left).

### 8.3 FF AND REW TORQUE

- 1) Load a cassette torque meter in the cassette holder and measure starting torque for both F.F. and REW operations with the tape rewound close to beginning of the tape or wound close to end of the tape, respectively.

The reading should be:

F.F. torque (right reel table): 70 ~ 160 g-cm.

REW torque (left reel table): 70 ~ 160 g-cm.

- 2) If the torque is out of the limits, change Clutch (B) Assy and Drive belt (A) if necessary. (Refer to Fig. 8-2)

### 8.4 TAPE TRAVEL

Using a mirror tape (TCC-903), check to see that the tape is running stably without curling and touching the tape guides on the erase and rec/play heads.

If there is curling of the tape affecting the response or damaging the tape, it is necessary to check the head guide height, perpendicularity of the head face, and alignment of the pinch roller in relation to the capstan. Mirror tape (TCC-903) and Head Height Adjusting jig (THG801C & THG802) are required for checking.

To check the head guide height, the tape is replaced with the head height check jig (THG801C), which is put on the base. While firmly seating the jig on the surface of the base, slide the jig (THG802) past each head guide to check if it goes through without hitting them.

Using the rear check bar of the jig (THG802), also check perpendicularity of each head face. If the guide is low, insert the required amount of 0.1 mm or 0.2 mm thick washers under the head mounting legs.

**NOTE:** Always adjust the head azimuth when the head height is adjusted.

## 8-5 HEAD AZIMUTH

Fine adjustment of the record/playback head should be made after the tape travel check has been completed.  
For the erase head, only carry out the adjustment in 8-4 Tape travel.

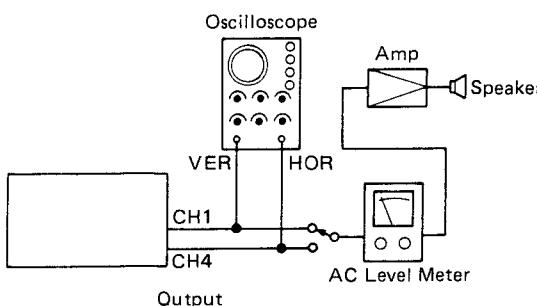


Fig. 8-3

- 1) Connect a vertical input terminal of an oscilloscope to the TAPE OUT "1" jack and a horizontal input terminal to the TAPE OUT "4" jack.
- 2) Load the deck with a test tape and playback the test signal.
- 3) First reproduce a test tone of 315 Hz, and coarsely adjust the azimuth adjusting screw (Fig. 7-2) to obtain approx. zero phase difference as shown in the Fig. 8-4. Next, reproduce a high frequency tone of 10 kHz and proceed to the fine adjustment.

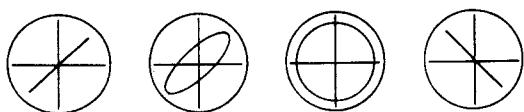


Fig. 8-4

- 4) Confirm that the output level of TAPE OUT 2 & 3 is not relatively low compared with that of TAPE OUT 1 & 4.

## 8-6 TAPE SPEED

- 1) Connect a frequency counter to either one of TAPE OUT jacks.

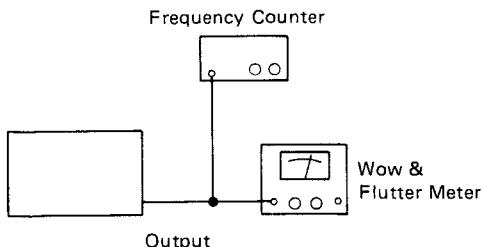


Fig. 8-5

- 2) Playback a wow & flutter test tape and following values will be obtained.

Deviation:  $3000 \text{ Hz} \pm 45 \text{ Hz}$  (4.76 cm/sec),  
 $6000 \text{ Hz} \pm 90 \text{ Hz}$  (9.5 cm/sec)

Width of deviation: Within 30 Hz

Pitch control range\*: Minimum 2700 Hz, 5400 Hz.  
Maximum 3300 Hz, 6600 Hz.

\* Tape speed becomes minimum with the PITCH control knob turned up to the leftmost and maximum with the PITCH control knob turned up to the rightmost.

- 3) If the speed deviation is out of the limits, adjust as follows;

- a) Remove the top case as mentioned in section 7-1.
- b) Clean the tape path and check the pinch roller pressure and take-up torque.
- c) If they are normal, place the PITCH control in the center "click stop" position and reproduce approx. mid position of the test tape.
- d) Adjust the trim pot RM09 (RM11) (Refer to Fig. 7-2) provided on the CPU PCB with a small "--" driver to obtain  $3000 \text{ Hz} \pm 5 \text{ Hz}$  reading on the frequency counter.  
The checks and adjustment should be performed at least one minute after the capstan motor has been started to rotate.
- e) First adjust with 9.5 cm/sec., then adjust with 4.75 cm/sec.

## 8-7 WOW AND FLUTTER

Reproduce Method:

- 1) Connect a wow and flutter meter to one of TAPE OUT jacks.
- 2) Reproduce with a Wow and Flutter Test Tape.
- 3) The measurement should be performed at both beginning and end of the tape.

Specification: 0.15% (NAB weighted)

$\pm 0.15\%$  peak (DIN/IEC/ANSI weighted)

NOTE: Proceed to the measurement after cleaning the tape path, especially capstan shaft, pinch roller, and the head surfaces.

## 9. MIXER SECTION SIGNAL CHECKS AND ADJUSTMENTS

### 9-1 INITIAL SETTINGS OF CONTROL SWITCHES AND KNOBS

- 1) Before proceeding adjustments, set each control knob and switch as shown below (as the pre-set condition).
 

|                            |                               |
|----------------------------|-------------------------------|
| Input fader . . . . .      | Max.                          |
| Master fader . . . . .     | Scale position 7 ~ 8          |
| INPUT selector . . . . .   | MIC/LINE                      |
| RECORD SELECT              |                               |
| switch . . . . .           | SAFE                          |
| MONITOR switch . . . . .   | LINE OUT                      |
| PHONES knob . . . . .      | Min.                          |
| TAPE CUE knob . . . . .    | Min.                          |
| SYNC knob . . . . .        | Min.                          |
| TRIM knob . . . . .        | LINE (fully counterclockwise) |
| EQ-HIGH, LOW, MID-GAIN . . | Center (click position)       |
| EQ-MID-SHIFT . . . . .     | Center                        |
| EFFECT knob . . . . .      | Min.                          |
| EFFECT MASTER knob . . .   | Max.                          |
| EFFECT RETURN knob . . .   | Min.                          |
| PAN knob . . . . .         | L (fully counterclockwise)    |
| DBX switch . . . . .       | OFF                           |
| SYNC switch . . . . .      | OFF                           |
| METER switch . . . . .     | TRK                           |
| PITCH CONTROL fader . . .  |                               |
| Center (click position)    |                               |
- 2) Apply -10 dB (316 mV), 1 kHz signal to the MIC/LINE jack (1).
- 3) Under this condition, the signal develops at LINE OUT L. Adjust the input fader of channel 1 so that the output at the LINE OUT L terminal is attenuated by 6 dB. Under this condition, the input fader knob will show 7 ~ 8 on the scale. This position is the reference setting position for the input fader.
- 4) Adjust the MASTER fader until the specified level -10 dBV (316 mV) is obtained on the LINE OUT (L) jack. Under this condition, the MASTER fader will be located at "7 ~ 8" on the scale and the position is the reference setting position. This is named to the reference condition.
- 5) Check that the output signal -10 dBV ±1 is obtained on the LINE OUT (R) jack when turning the PAN knob clockwise fully (R).
- 6) Under the condition of the preceding step 4, set the input signal level to -50 dBV (3.16 mV), and adjust the TRIM knob so that the level at the LINE OUT L become the specified level -10 dB (316 mV). The position will be approx. max. (MIC) turning clockwise.
- 7) Referring to the steps 2, 3, 5 and 6, set each input line knob of the input channels 2 ~ 6 and check each position.
- 8) Adjust the EFFECT knob from the input fader reference position stated in the step 3, above (with the EFFECT MASTER knob at Max.) until EFFECT OUTPUT level of -10 dBV (316 mV) is obtained.
- 9) With the MASTER fader knob set to the reference position at the reference conditions, feed the signal of -10 dBV (316 mV) to the EFFECT RETURN input jack. Adjust the EFFECT RETURN knob until the LINE OUT (L) of -10 dBV (316 mV) is obtained. Under this condition, the knob will show 2 ~ 3 o'clock position.
- 10) Check of the stereo LINE IN jacks  
Supply -10 dBV(316 mV), 1 kHz signals to the stereo LINE IN jacks on the rear panel. When the nearby variable resistor is set to maximum position, check that -10 dBV (316 mV) signals are output at the LINE OUT jacks in the standard condition.

### 9-2 LEVEL ADJUSTMENT OF VU METER

- 1) Set as follows under the reference condition (-10 dBV (316 mV) is output at LINE OUT L jack).  
RECORD SELECT: LEFT (TRK1, TRK3)  
METER: TRK  
The VU meter of TRK1 and TRK3 will indicate 0 VU.
- 2) Set as follows under the condition of 1, step 5 (-10 dBV (316 mV) is output at LINE OUT L jack).  
RECORD SELECT: RIGHT (TRK2, TRK4)  
METER: TRK  
The VU meter of TRK2 and TRK4 will indicate 0 VU.
- 3) Make adjustments with a minus driver from the rear of METER PCB (Fig. 9-2).  
TRK1: RX12      TRK2: RX22  
TRK3: RX32      TRK4: RX42

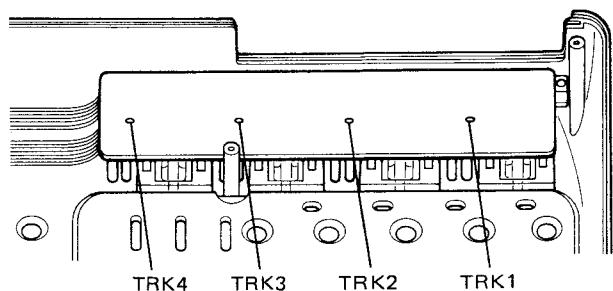


Fig. 9-2 VU Meter Adjustment

### 9-3 FREQUENCY RESPONSE

- 1) MIC/LINE LINE OUT, EFFECT OUT  
Check that the frequency response is in the specified range under the condition of item 1, steps 4, 5 and 6.  
Specification: 40 Hz ~ 15 kHz within +1 dB/-2dB
- 2) EFFECT RETURN ~ LINE OUT JACK  
Check that the frequency response is in the specified range under the condition of item 1, step 9.  
Specification: 40 Hz ~ 15 kHz within +1 dB/-2dB

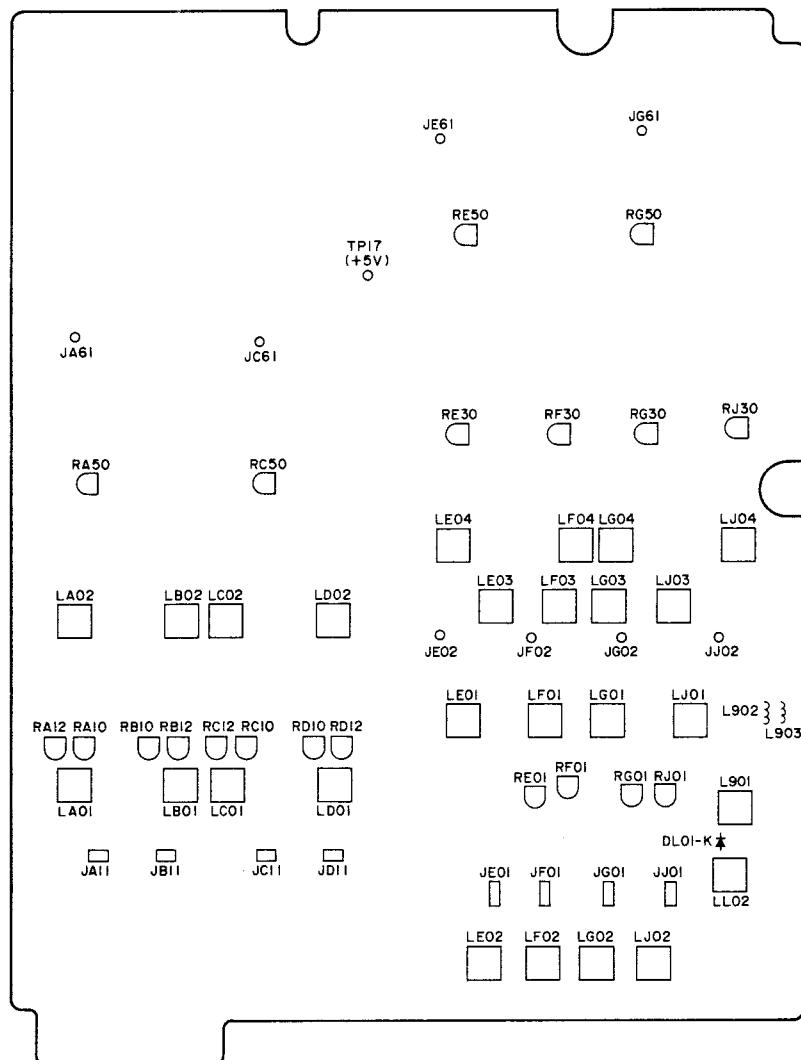
### 9-4 EQUALIZER RESPONSE

Under the reference condition, check that the LINE OUT level changes as follows at each frequency by turning each EQ knob.

EQ HIGH knob max., min.: ±12 dB ±2 dB at 10 kHz  
EQ LOW knob max., min.: ±12 dB ±2 dB at 100 Hz  
EQ MID- GAIN knob : 200 Hz ~ 5.4 kHz ±12 ±2 dB  
SHIFT

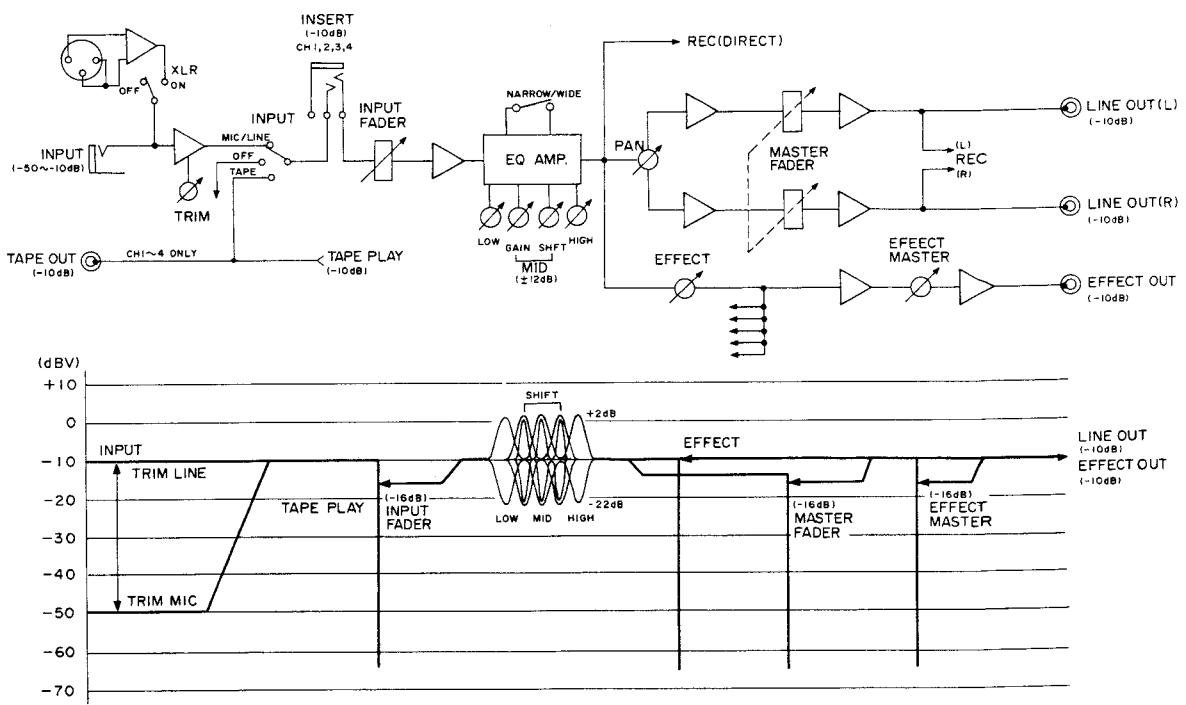
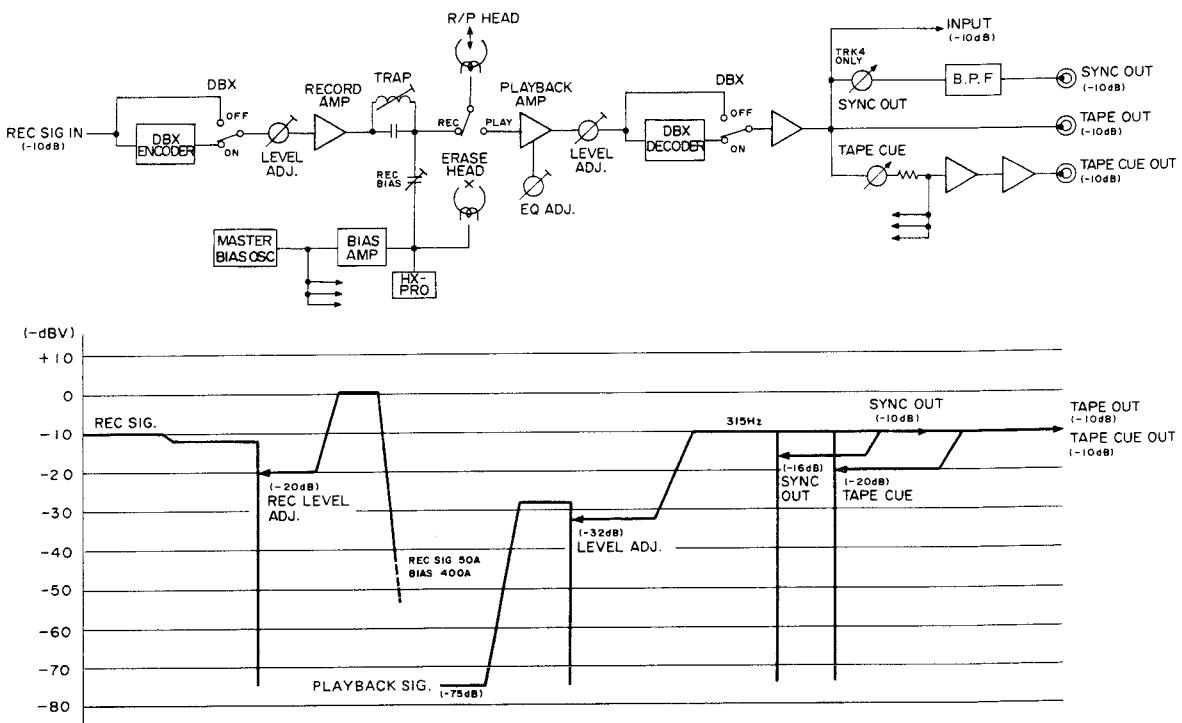
Q-FACTOR switch:  
The bandwidth shall vary.  
OFF : Narrow Band  
ON : Wide Band

## ADJUSTMENT POINT COMPONENT SIDE



| NO. | TRK  | 1    | 2    | 3    | 4                   | FUNCTION                      | CHECK POINT |
|-----|------|------|------|------|---------------------|-------------------------------|-------------|
| 1   | RA10 | RB10 | RC10 | RD10 | PLAYBACK LEVEL CAL  | TAPE-OUT                      |             |
| 2   | RA12 | RB12 | RC12 | RD12 | PLAYBACK EQ         | TAPE-OUT                      |             |
| 3   | RA50 |      | RC50 |      | DECODE TIME         | TP17 ↔ JA61/JC61              |             |
| 4   | RE50 |      | RG50 |      | ENCODE TIME         | TP17 ↔ JE61/JG61              |             |
| 5   |      | LL02 |      |      | BIAS OSC FREQUENCY  | DL01-Kathod                   |             |
| 6   |      | L901 |      |      | +/-15V DC SUPPLY    | GND ↔ L903 (+15V)/L902 (-15V) |             |
| 7   | RE30 | RF30 | RG30 | RJ30 | REC LEVEL           | TAPE-OUT                      |             |
| 8   | RE01 | RF01 | RG01 | RJ01 | BIAS LEVEL          | TAPE-OUT                      |             |
| 9   | LA01 | LB01 | LC01 | LD01 | PLAYBACK BIAS TRAP  | TAPE-OUT                      |             |
| 10  | LA02 | LB02 | LC02 | LD02 | PLAYBACK LPF        | TAPE-OUT                      |             |
| 11  | LE01 | LF01 | LG01 | LJ01 | REC BIAS TUNING     | JE01-2 ↔ JE01-1, F, G, J      |             |
| 12  | LE02 | LF02 | LG02 | LJ02 | ERASE BIAS TUNING   | JE01-2 ↔ JE01-3, F, G, J      |             |
| 13  | LE03 | LF03 | LG03 | LJ03 | REC BIAS TRAP       | JE02, JF02, JG02, JJ02        |             |
| 14  | LE04 | LF04 | LG04 | LJ04 | REC EQ (HIGH SPEED) | TAPE-OUT                      |             |

## LEVEL DIAGRAM



## 10. RECORD/PLAYBACK AMPLIFIER CHARACTERISTICS

### 10-1 PLAYBACK LEVEL

- 1) Connect a level meter to the TAPE OUT jack on the side panel. Set the normal speed.
- 2) Place the DBX switch in OUT position and playback a test tape TCC-130, 400 Hz, and adjust the trim pot RA10 Fig. 00 for -7 dB (447 mV) reading on the level meter.  
TAPE OUT 1: RA10      TAPE OUT 2: RB10  
TAPE OUT 3: RC10      TAPE OUT 4: RD10
- 3) Under this condition, place all RECORD SELECT switch in the SAFE position and the METER switch in TRK position, and the VU meter indicates +3 VU  $\pm 1$  VU.  
\* Converted so that 160 Wb/m corresponds to 0 dB.

### 10-2 PLAYBACK FREQUENCY RESPONSE

- 1) Connect a level meter to the TAPE OUT "1" jack on the side panel.
- 2) Playback a test tape TCC-261B and reads the output level; it should be within the following limits.  
Head azimuth check: The frequency response is out of the specification if the head was cleaned, adjust trim pot RA12 with the test frequency set to 10 kHz.
- 3) For the remainings, also check in the same manner. Adjustment trim pots are as follows.  
TAPE OUT 1: RA12      TAPE OUT 2: RB12  
TAPE OUT 3: RC12      TAPE OUT 4: RD12

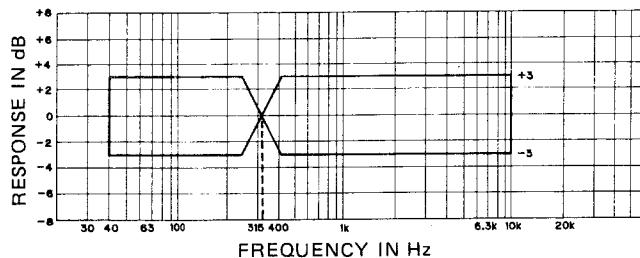


Fig. 10-2 Playback Frequency Response

### 10-3 DBX TIME ADJUSTMENT

The adjustment is necessary only when the DBX IC is changed.

#### 1) Decode mode

Adjust each trim pot until the DC voltage across each resistor is 15 mV with the DBX switch set to IN and all tracks set to the PLAY mode.

| TRACK | TRIM POT | REG. | CHECK POINT                 |
|-------|----------|------|-----------------------------|
| 1/2   | RA50     | RA61 | JA61 $\leftrightarrow$ TP17 |
| 3/4   | RC50     | RC61 | JC61 $\leftrightarrow$ TP17 |

#### 2) Encode mode

Set the DBX switch to IN and load a blank tape. Set the mode to REC-PAUSE with the RECORD SELECT switches of all tracks to the DIRECT side.

Adjust each trim pot until the DC voltage across each resistor is (15 mV).

| TRACK | TRIM POT | REG. | CHECK POINT                 |
|-------|----------|------|-----------------------------|
| 1/2   | RE50     | RE61 | JE61 $\leftrightarrow$ TP17 |
| 3/4   | RG50     | RG61 | JG61 $\leftrightarrow$ TP17 |

### 10-4 BIAS OSC FREQUENCY

Readjust the bias OSC frequency when the master oscillator OSC Trance (LL02) is changed.

Set the mode to REC-PAUSE with a blank tape loaded. Adjust LL02 until the bias OSC frequency is  $80 \text{ kHz} \pm 0.5 \text{ kHz}$  at the output side (diode DL01 cathode terminal) of the oscillator (LL02).

### 10-5 BIAS TUNING OF BIAS AMP

Make the tuning when the master OSC trance or the erase head is changed.

Set the all tracks to the REC-PAUSE mode and adjust each bias amp. Until the DC voltage across each resistor is minimum (less than 25 mV).

| TRACK | COIL | REG. | CHECK POINT                |
|-------|------|------|----------------------------|
| 1     | LE01 | RE04 | JE01-1 $\leftrightarrow$ 2 |
| 2     | LF01 | RF04 | JF01-1 $\leftrightarrow$ 2 |
| 3     | LG01 | RG04 | JG01-1 $\leftrightarrow$ 2 |
| 4     | LJ01 | RJ04 | JJ01-1 $\leftrightarrow$ 2 |

### 10-6 BIAS TRAP OF PLAYBACK AMP

Proceed the tuning when the oscillator trance (LL02) is changed.

Set the track to be adjusted to the PLAY mode and the adjacent track to the REC-PAUSE mode. Adjust the bias trap until the amp. output terminal voltage (bias leakage) of the track to be adjusted is minimum.

| TRACK | COIL | CHECK POINT |
|-------|------|-------------|
| 1     | LA01 | TAPE OUT 1  |
| 2     | LB01 | TAPE OUT 2  |
| 3     | LC01 | TAPE OUT 3  |
| 4     | LD01 | TAPE OUT 4  |

### 10-7-(1) Bias trap

Make the adjustment when the oscillator trance (LL02) is changed.

Set the all tracks to the REC-PAUSE mode and adjust each bias amp. Until the bias leakage voltage of each resistor terminal is minimum.

| TRACK | COIL | REG. | CHECK POINT |
|-------|------|------|-------------|
| 1     | LE03 | RE11 | JE02        |
| 2     | LF03 | RF11 | JF02        |
| 3     | LG03 | RG11 | JG02        |
| 4     | LJ03 | RJ11 | JJ02        |

### 10-7-(2) Erasure bias voltage adjustment

This should be re-adjusted after having replaced the master oscillator (LL02) or the erase head.

With all tracks in the REC-PAUSE mode, adjust the erase transformer to minimize the DC voltages across the resistors listed below. (0.65V)

| TRACK | TRANCE | REG. | CHECK POINT                |
|-------|--------|------|----------------------------|
| 1     | LE02   | RE05 | JE01-3 $\leftrightarrow$ 2 |
| 2     | LF02   | RF05 | JF01-3 $\leftrightarrow$ 2 |
| 3     | LG02   | RG05 | JG01-3 $\leftrightarrow$ 2 |
| 4     | LJ02   | RJ05 | JJ01-3 $\leftrightarrow$ 2 |

### 10-7-(3) Reproduce LPF adjustment

This should be re-adjusted after having replaced the master oscillator (LL02) or the erase head.

With all tracks in the REC-PAUSE mode, adjust the coil to minimize the bias leakage current output at TAPE OUT.

| TRACK | COIL | CHECK POINT |
|-------|------|-------------|
| 1     | LA02 | TAPE OUT 1  |
| 2     | LB02 | TAPE OUT 2  |
| 3     | LC02 | TAPE OUT 3  |
| 4     | LD02 | TAPE OUT 4  |

### 10-8 BIAS VOLTAGE SETTING

- 1) Set the input fader and the knob to the reference positions as mentioned under the section 9.
- 2) Connect an audio oscillator to the MIC/LINE (1) jack and a level meter to the TAPE OUT (1) jack. Set the RECORD SELECT switch to be adjusted to the DIRECT side and load a blank tape AC-513 (or TCC-203B).
- 3) Connect an AC voltmeter across pins 1 and 2 of JA11, set semi-fixed resistor RE01 to the minimum position, and turn it gradually clockwise until the saturated point. Ensure that the voltage at the saturated point is 3.5 mV  $\pm 0.5$  mV.
- 4) Adjust for the remaining tracks in the same way.

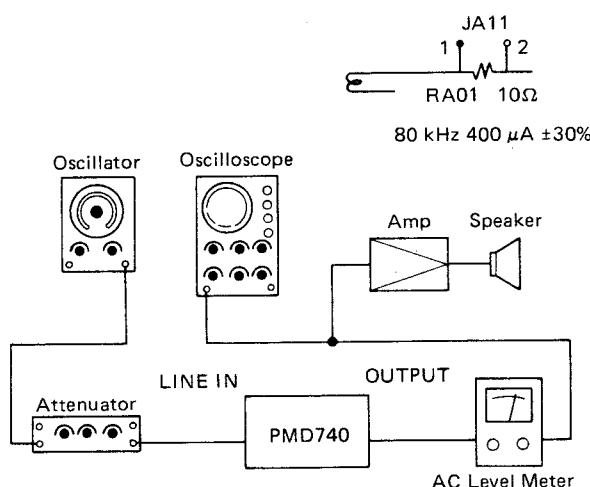


Fig. 10-8 Bias Voltage Measurement

### 10-9 RECORD LEVEL

- 1) Set the input faders and the knobs to the reference positions as mentioned under the section 9.
- 2) Connect an oscillator to the MIC/LINE (1) jack and a level meter to the TAPE OUT (1) jack. Set the RECORD SELECT switch to be adjusted to the DIRECT side and load a blank tape AC-513 (or TCC-203B).
- 3) Record the reference level input signal 400 Hz, -10 dBV (316 mV) on the TRK1. Play back the signal and adjust RE30 until the TAPE OUT level is the reference level -10 dBV (316 mV).
- 4) For the remaining tracks, adjust the recording level in the same way.

TRK1: RE30      TRK2: RF30  
TRK3: RG30      TRK4: RJ30

### 10-10 OVERALL FREQUENCY RESPONSE

- 1) Connect the test equipments as mentioned under the steps 1 and 2 of "9-9 RECORD LEVEL".
- 2) Decrease the input signal level by 20 dB from the reference level and set the level to -30 dBV (3.16 mV). Set the tape speed to high speed (9.5 cm/sec).
- 3) Vary the input signal frequency over a range of 40 Hz to 10 kHz and record the frequencies, and then playback the signals just recorded. The playback output levels should be as shown in Fig. 10-10.
- \* If the output reading is out of the limits, check the playback frequency again. If the playback response is correct try to readjust the bias voltage as mentioned in 9-8. When the output level is lower than the limit, decrease the bias level slightly, and when higher increase the bias slightly. However, recording distortion may increase the bias voltage is lowered excessively, so make sure the distortion is within the limit, less than 2.5% at 400 Hz at the reference record level.
- 4) Set the tape speed to normal speed(4.76 cm/sec), and perform the same checking as 3).

**NOTE:** Varying the bias voltage may upset the recording level adjustment, so always make sure the recording level and readjust the level again as necessary by referring to the section 10-9.

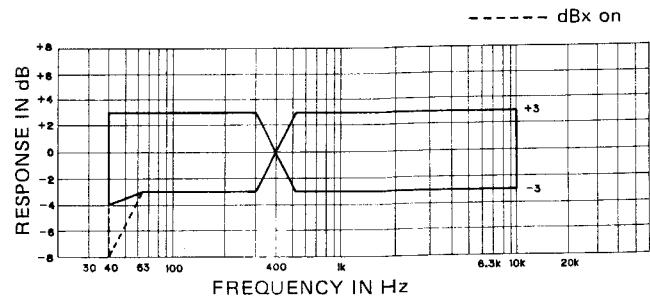


Fig. 10-10 Overall Frequency Response

### 10-11 OVERALL DISTORTION

- 1) Set and adjust the test setup as mentioned under the steps 1 and 2 of "10-9 RECORD LEVEL".
- 2) Vary the frequency of the reference input signal to 400 Hz, and record and play back the frequency. Measure the distortion; it should be less than 2.5%.  
If out of limits:
  - \* Readjust the bias voltage. Reference bias current is about 350  $\mu$ A.
  - \* Try to erase the erase and record/playback heads, or replace the head(s).
  - \* Check for overall S/N.

### 10-12 OVERALL SN RATIO

- 1) Set and adjust the test set-up as mentioned under the steps 1 and 2 of "10-9 RECORD LEVEL".
- 2) Record the reference input signal 400 Hz, and then remove the input plug and continue the recording with no signal applied.
- 3) Playback both the reference signal and no signal just recorded and read the level difference between the outputs. The difference (SN) should be higher than 43 dB for each track, when measured through a 20 Hz to 20 kHz filter.

### 10-13 ERASING RATIO

- 1) Connect test equipments as shown in Fig. 10-13 and adjust the controls and switches as mentioned under the steps 1 and 2 of "10-9 RECORD LEVEL".
  - 2) Adjust the signal generator to provide 1 kHz, 0 dBV and record it. Playback the signal just recorded and read and note the output level.
  - 3) Rewind the tape up to the beginning of the tape just recorded. Remove the plug from the MIC/LINE jack and then record no signal on the tape just recorded with the 1 kHz signal.
  - 4) Rewind the tape just recorded with no signal and playback it. Read the output level with the level meter sensitivity increased.
- Compare the output levels obtained in the steps 2 and 4; the level difference should be higher than 65 dB for each channel. Reference: Current consumption more than 30 mA

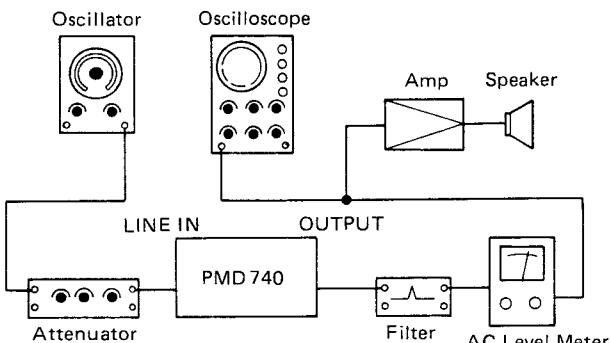


Fig. 10-13 Erasing Ratio Measurement

### 10-14 CROSSTALK BETWEEN CHANNELS

- 1) Set and adjust the test equipment as mentioned under the steps 1 and 2 of "10-9 RECORD LEVEL".
  - 2) Record the reference signal of 1 kHz, -10 dBV (316 mV) on the TRK1. Rewind the tape just recorded and playback it. Measure the leakage output levels to the adjacent channels through a 1 kHz filter, and measure ratio(s) against the reference level.
- The ratio should be higher than 45 dB for each channel.

### 10-15 SYNC CROSSTALK

This refers to the crosstalk between adjacent tracks when a SYNC recording is made. In other words, it refers to the degree of the bias signal leakage into adjacent tracks from a recording track.

Set each track as mentioned under "10-9 RECORD LEVEL".

- **Crosstalk between Track #1 and #2**

- 1) Place the RECORD SELECT TRK1 switch in the "ON", and TRK2 switch in the "SAFE" positions.
- 2) Measure the output at the TAPE OUT 2 jack with the TRK "1" set to record mode and the TRK 2 to playback mode.
- 3) Change the input signal frequency to 10 kHz and check how much of the signal applied to the TRK "1" leaks into the TRK2, or read the level difference against the reference level. The difference should be less than 0 dB at 10 kHz.

- **Crosstalk between Other Tracks**

- 1) The same method used for measuring crosstalk between TRK1 and TRK2 is used. When measuring crosstalk between other tracks, the RECORD SELECT switch should be set as below. Number in parenthesis indicates the setting from the opposite channel.

Setting of RECORD SELECT switch

| Combination                 | Record Track | Playback Track |
|-----------------------------|--------------|----------------|
| Between tracks<br>#1 and #2 | TRK1         | SAFE 2         |
|                             | (TRK2)       | (SAFE 1)       |
| Between tracks<br>#2 and #3 | TRK2         | SAFE 3         |
|                             | (TRK3)       | (SAFE 2)       |
| Between tracks<br>#3 and #4 | TRK3         | SAFE 4         |
|                             | (TRK4)       | (SAFE 3)       |

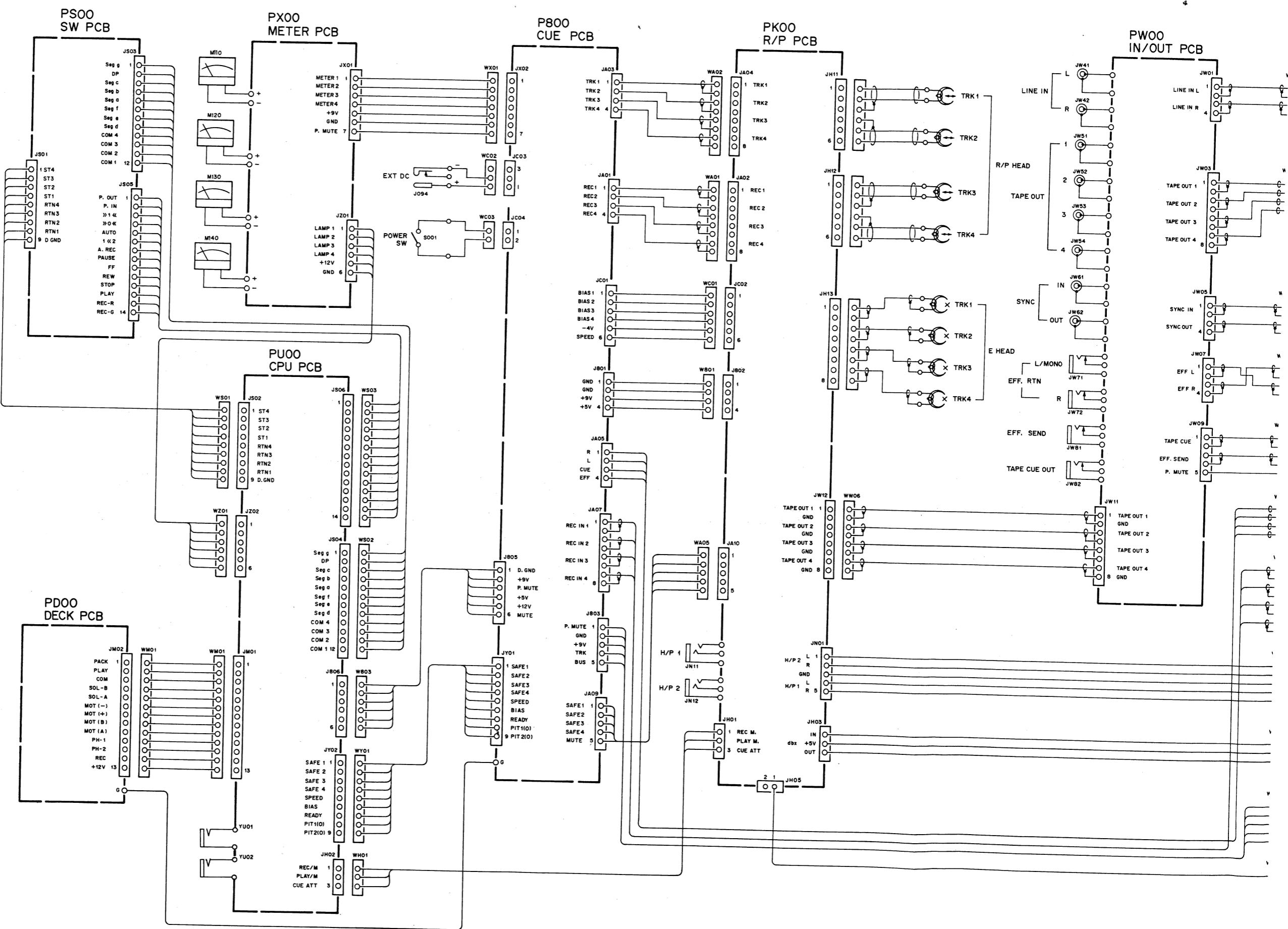
### 10-16 SYNC SIGNAL R/P

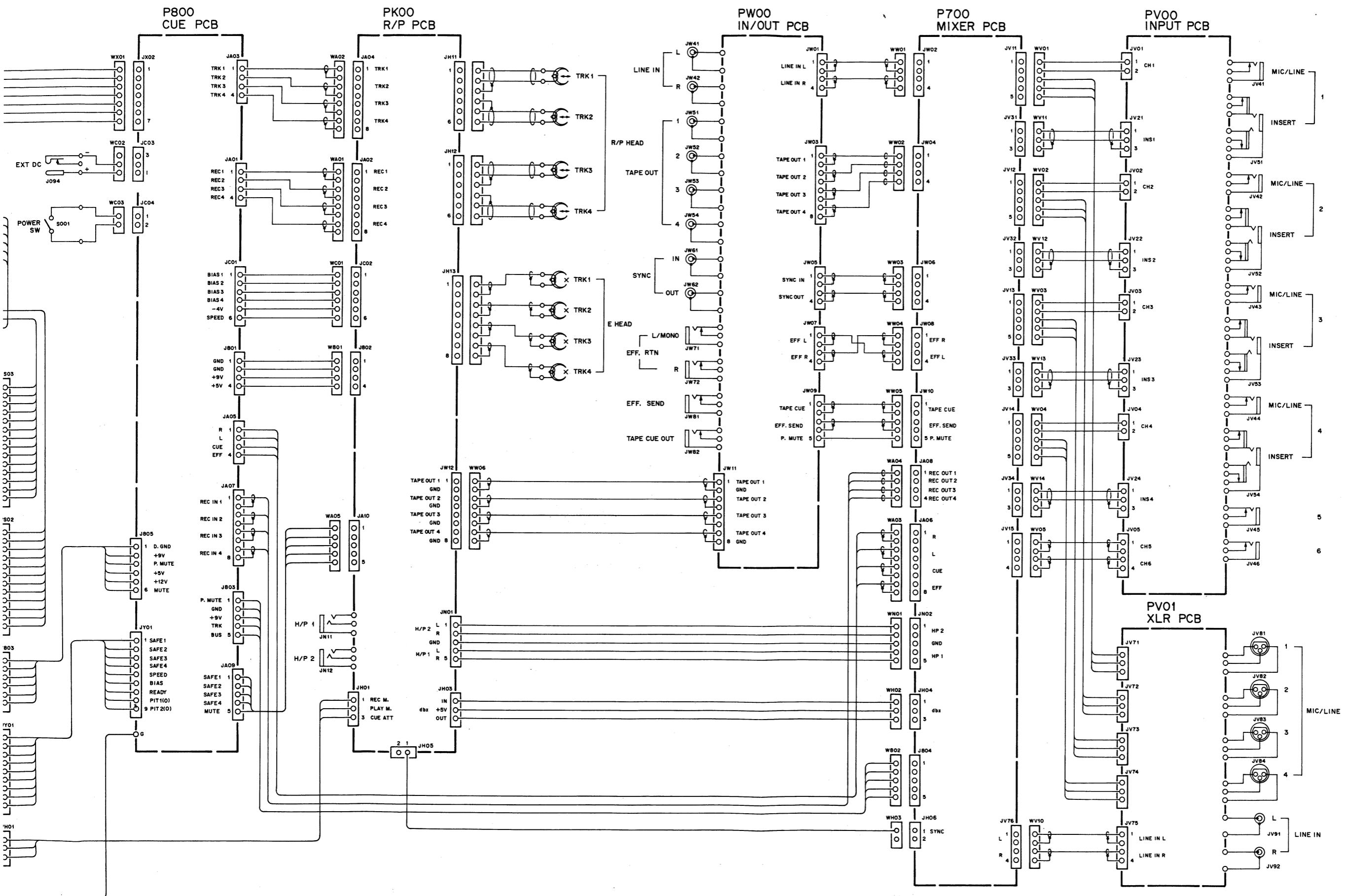
The TRK4 is exclusively used for recording and reproducing of the SYNC signal.

The input signal is applied to the SYNC IN terminals instead of the MIC/LINE terminals. In the same way the SYNC OUT terminals are used instead of TAPE OUT 4 when reproducing.

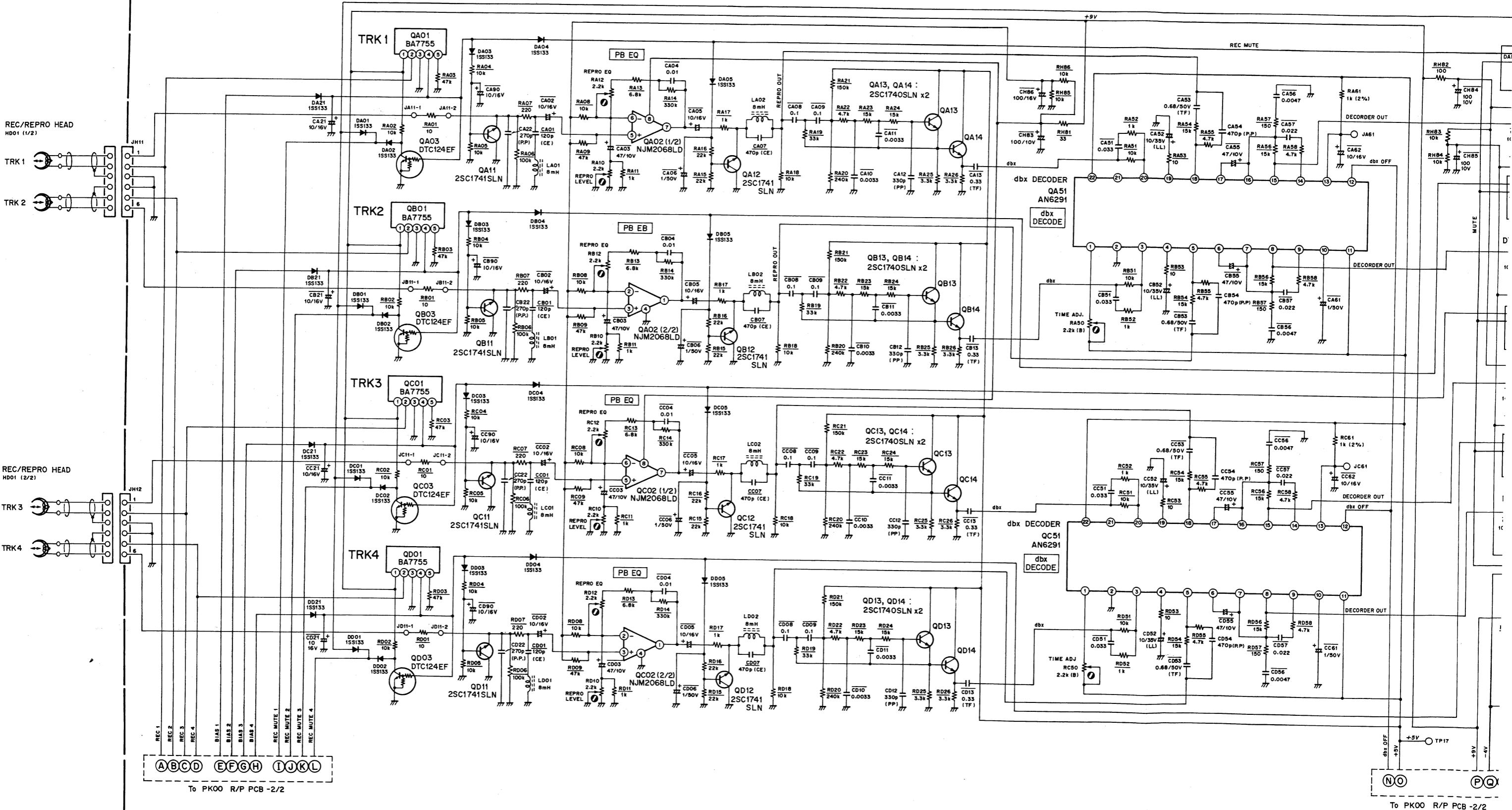
- 1) Apply the SYNC reference input signal of -10 dB (316 mV) to the SYNC IN terminals.
- 2) Set the SYNC switch to ON, and then place the RECORD SELECT switch for TRK4 in the DIRECT position. Record signals on the TRK4.
- 3) Set the SYNC knob to its max. position and read the output level at the SYNC OUT terminals. It should be about -4 dBV.  
Reference: The overall frequency response is  $\pm 3$  dB at 300 Hz ~ 3 kHz.

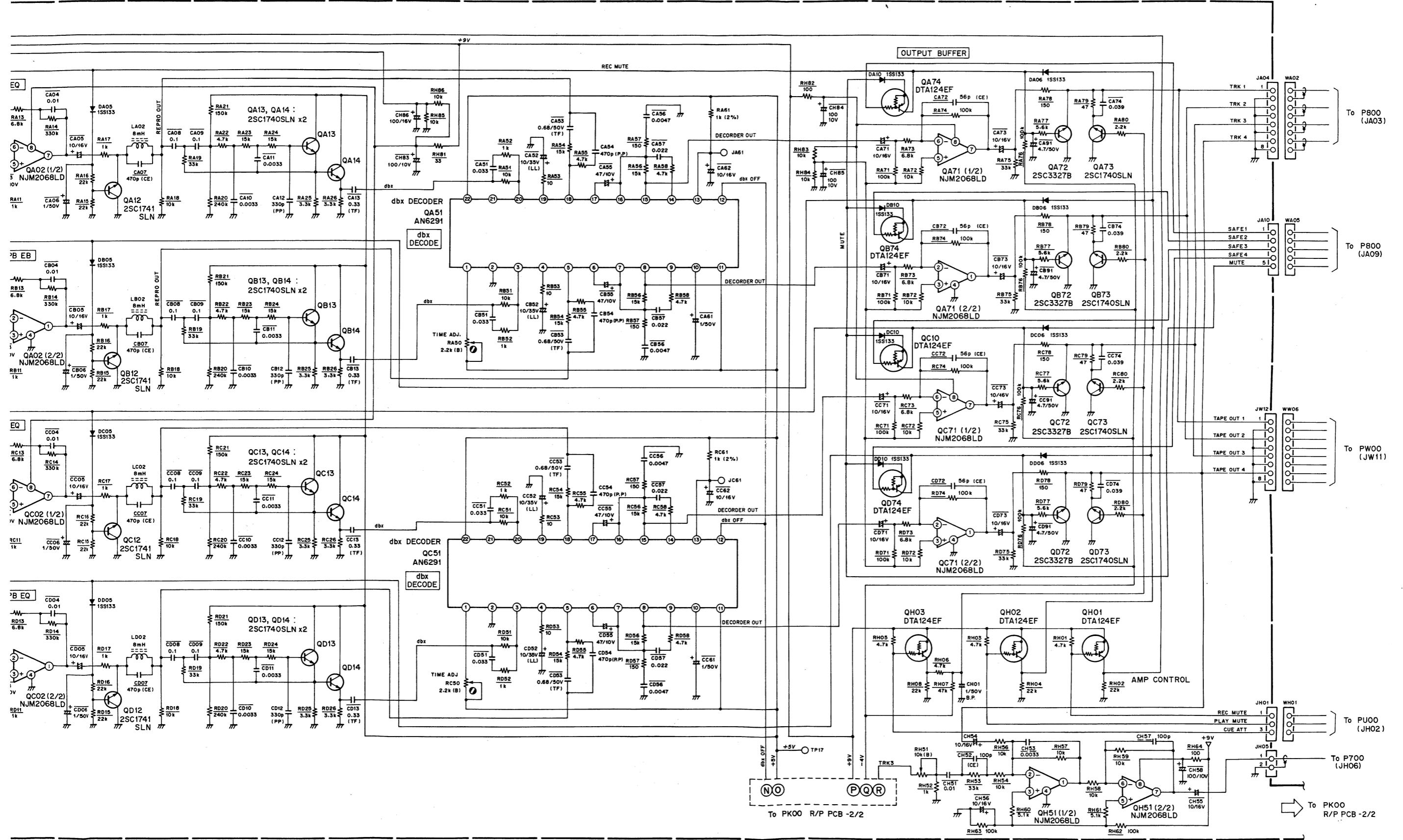
## 11. SCHEMATIC DIAGRAMS AND PARTS LOCATION (Pattern Side)





PK00 R/P PCB -1/2



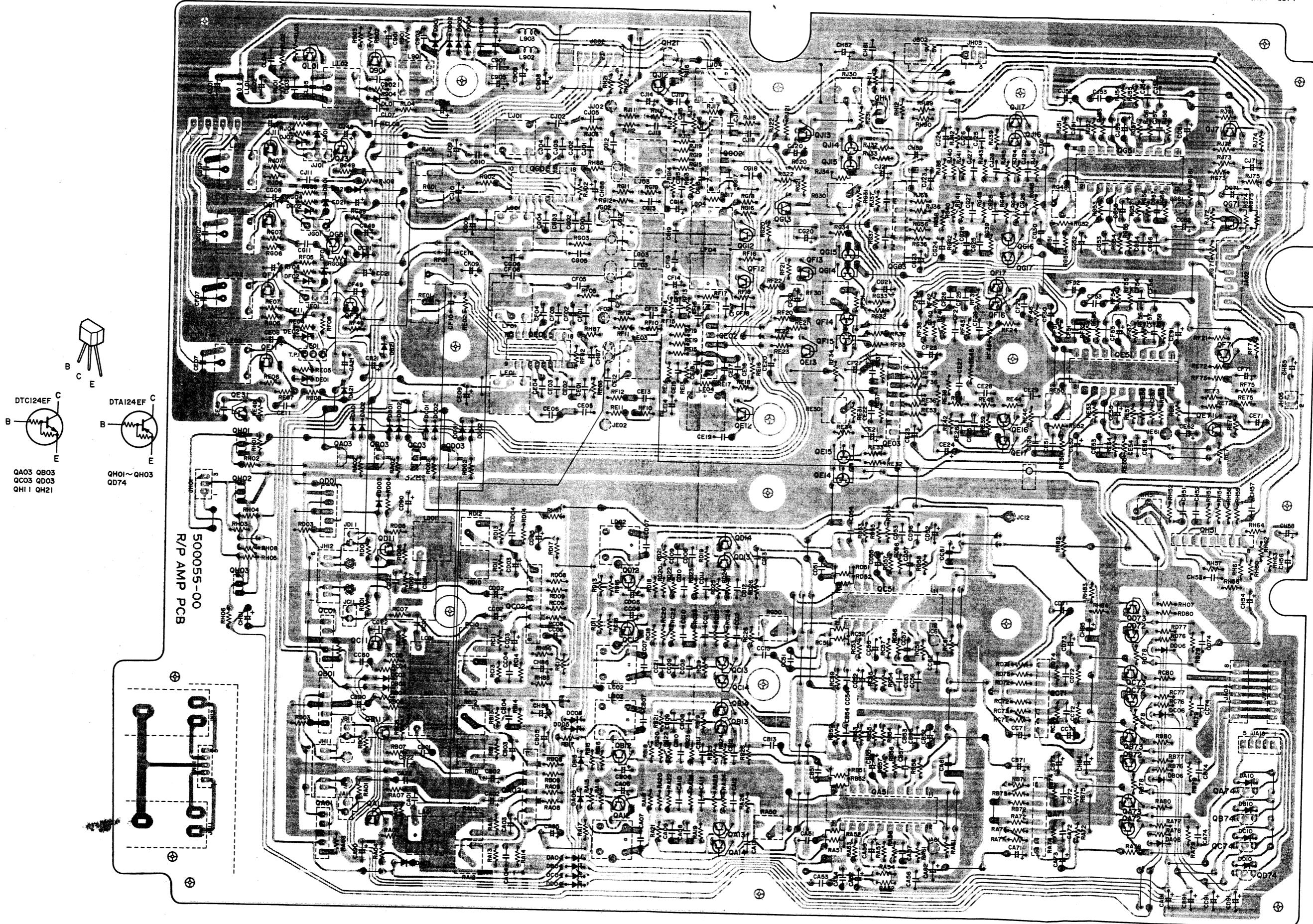


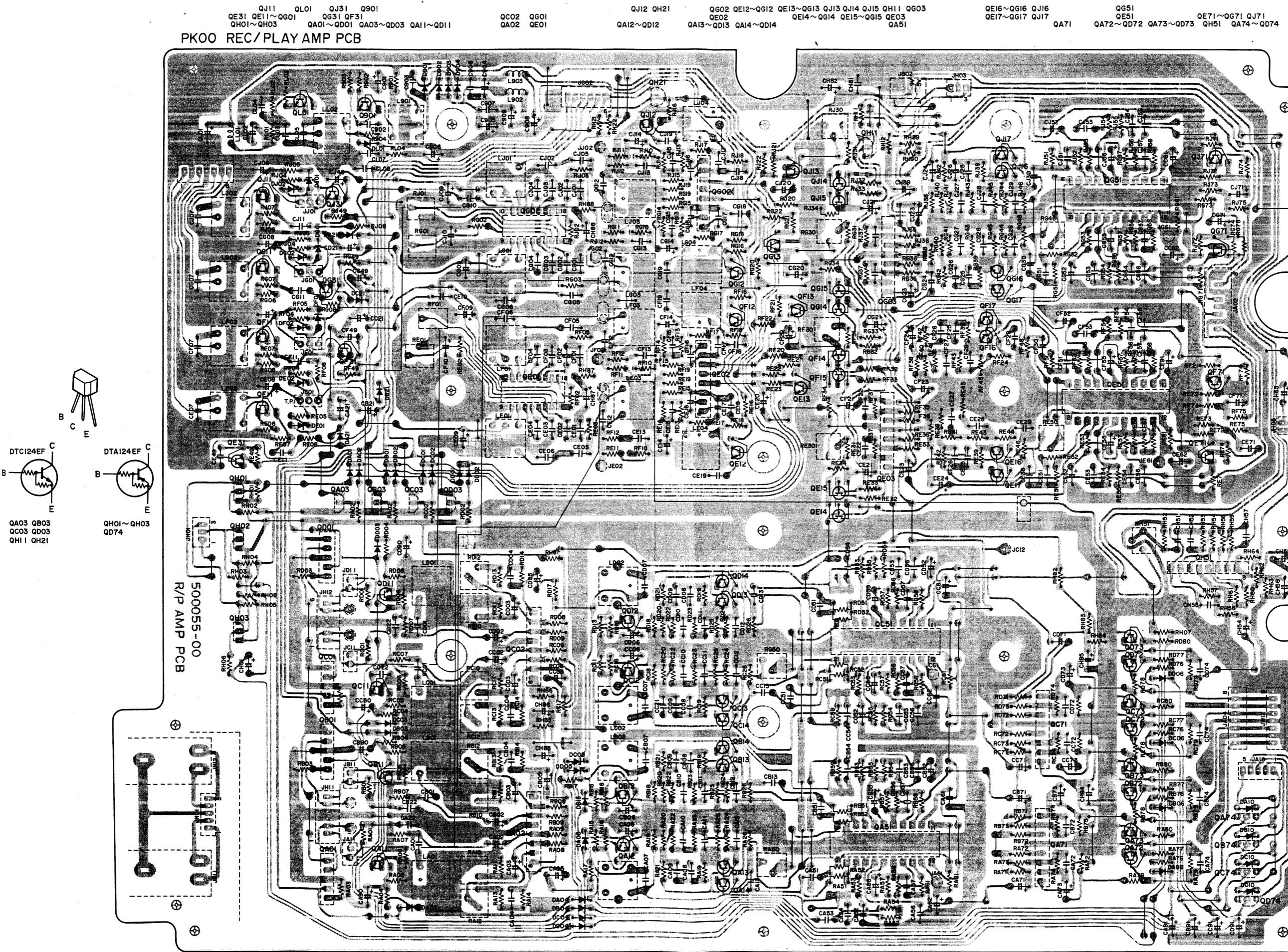
QJ11 QL01 QJ31 Q901  
QE31 QE11~QG01 QG31 QF31  
QH01~QH03 QA01~QD01 QA03~QD03 QA11~QD11

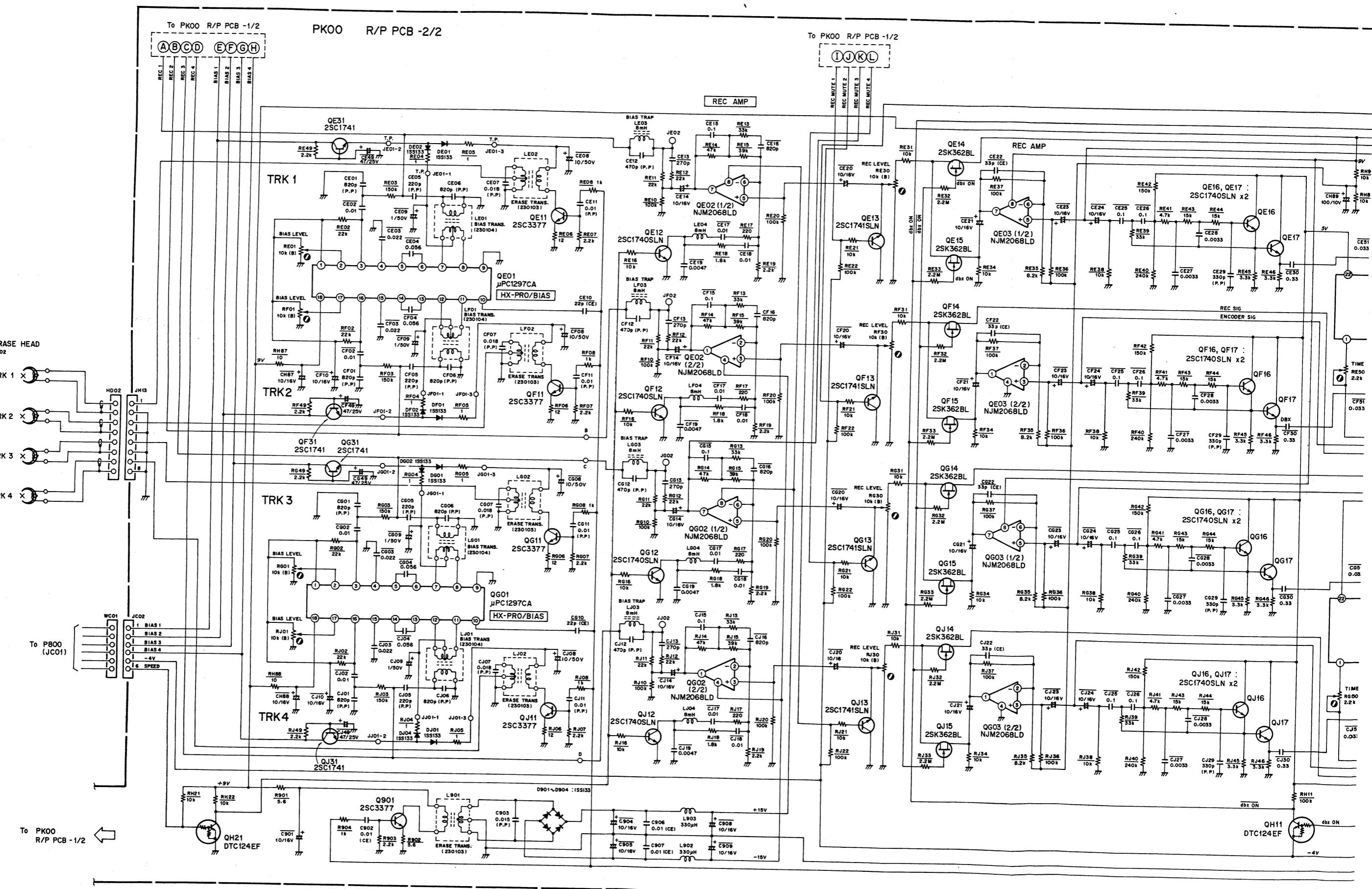
PKOO REC/PLAY AMP PCB

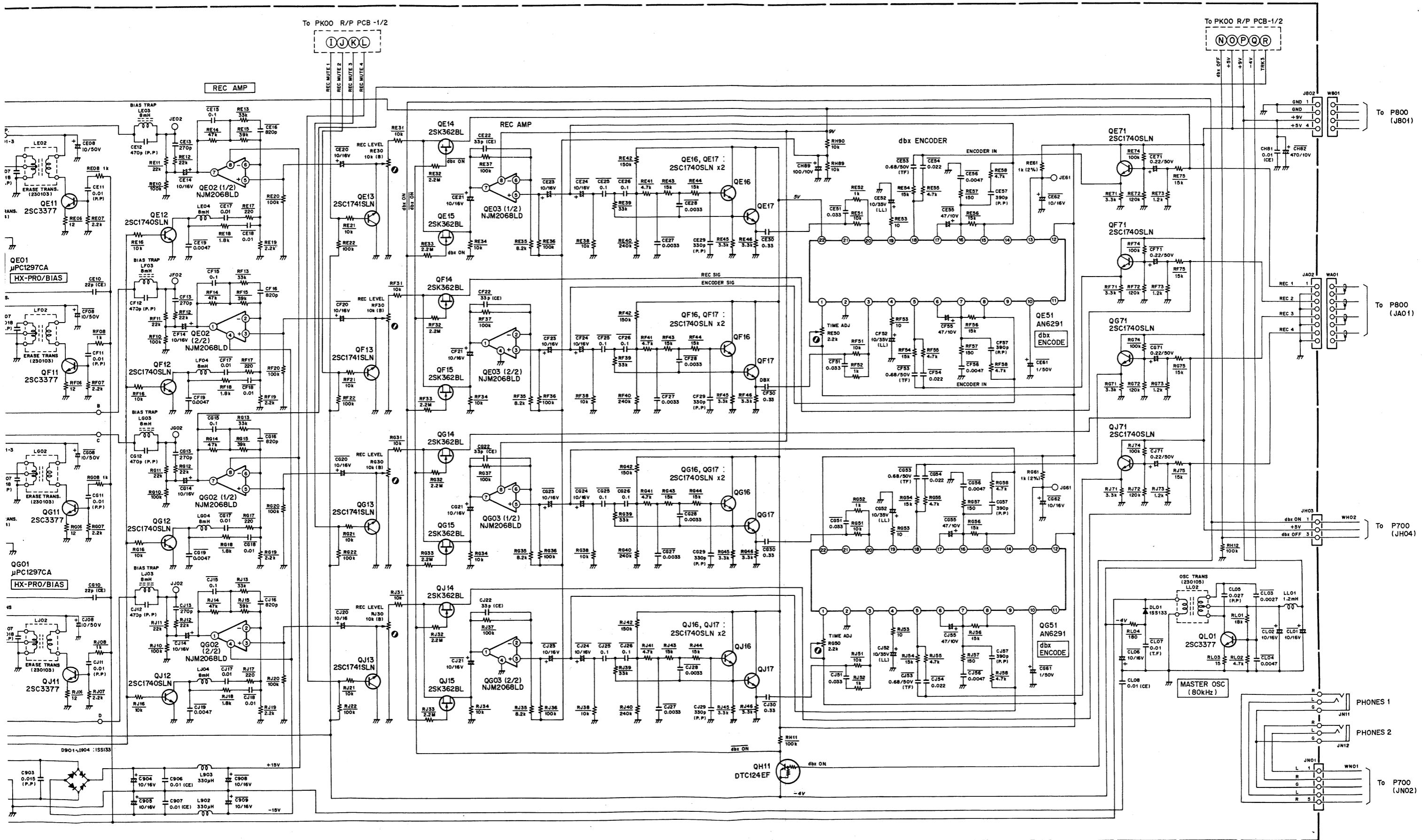
QC02 QG01  
QA02 QE01

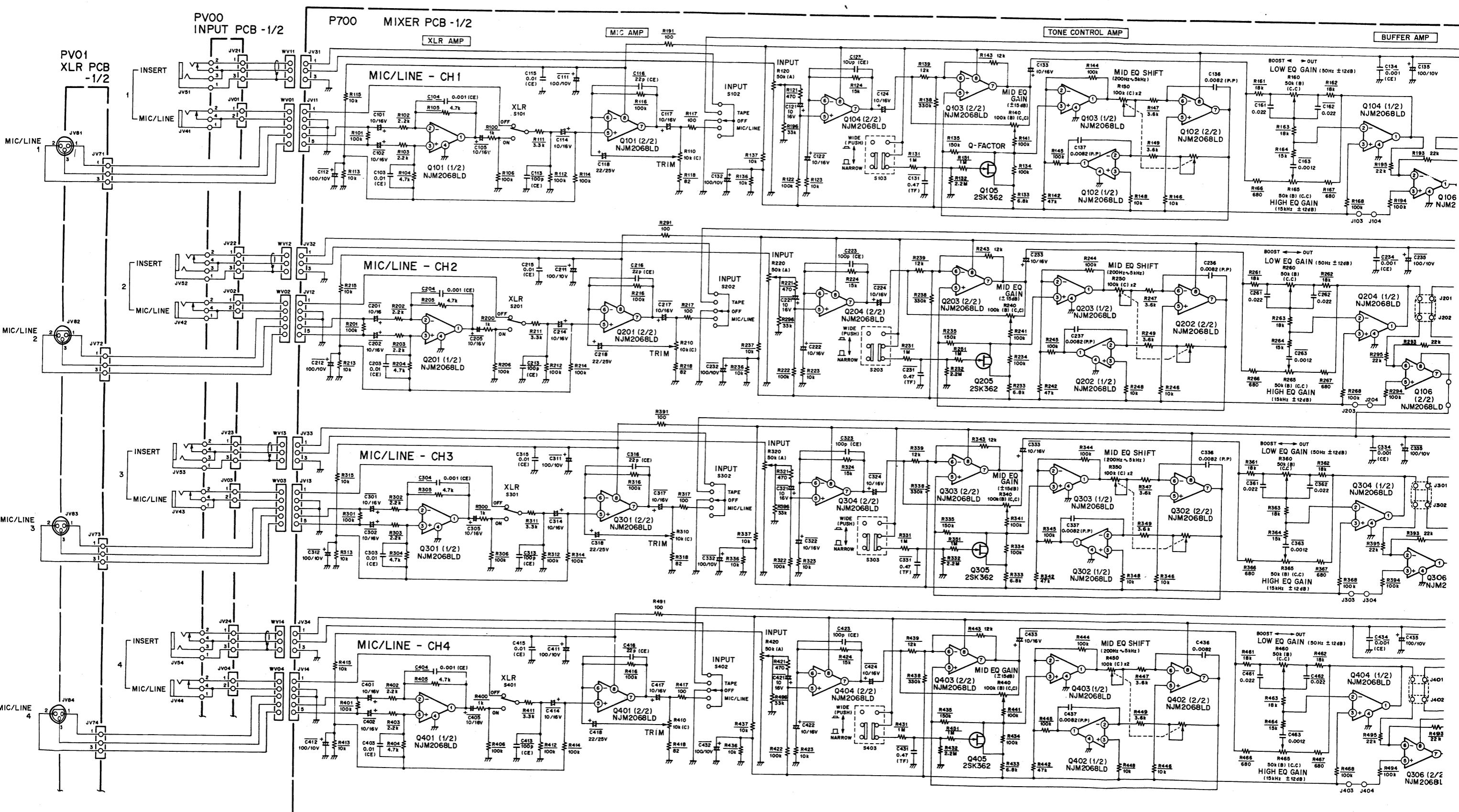
QE16~QG16 QJ16  
 QE17~QG17 QJ17

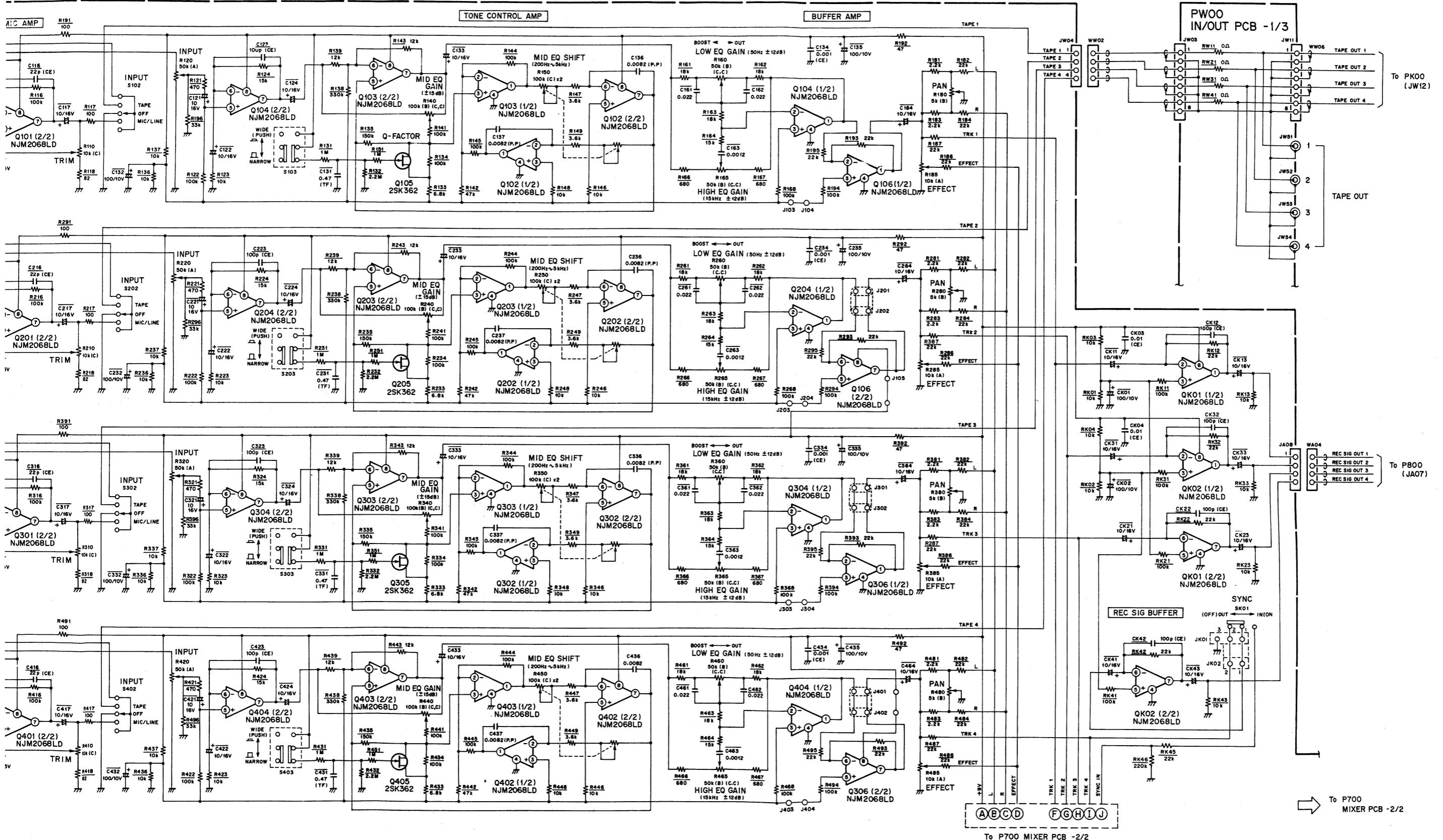












P700 MIXER PCB

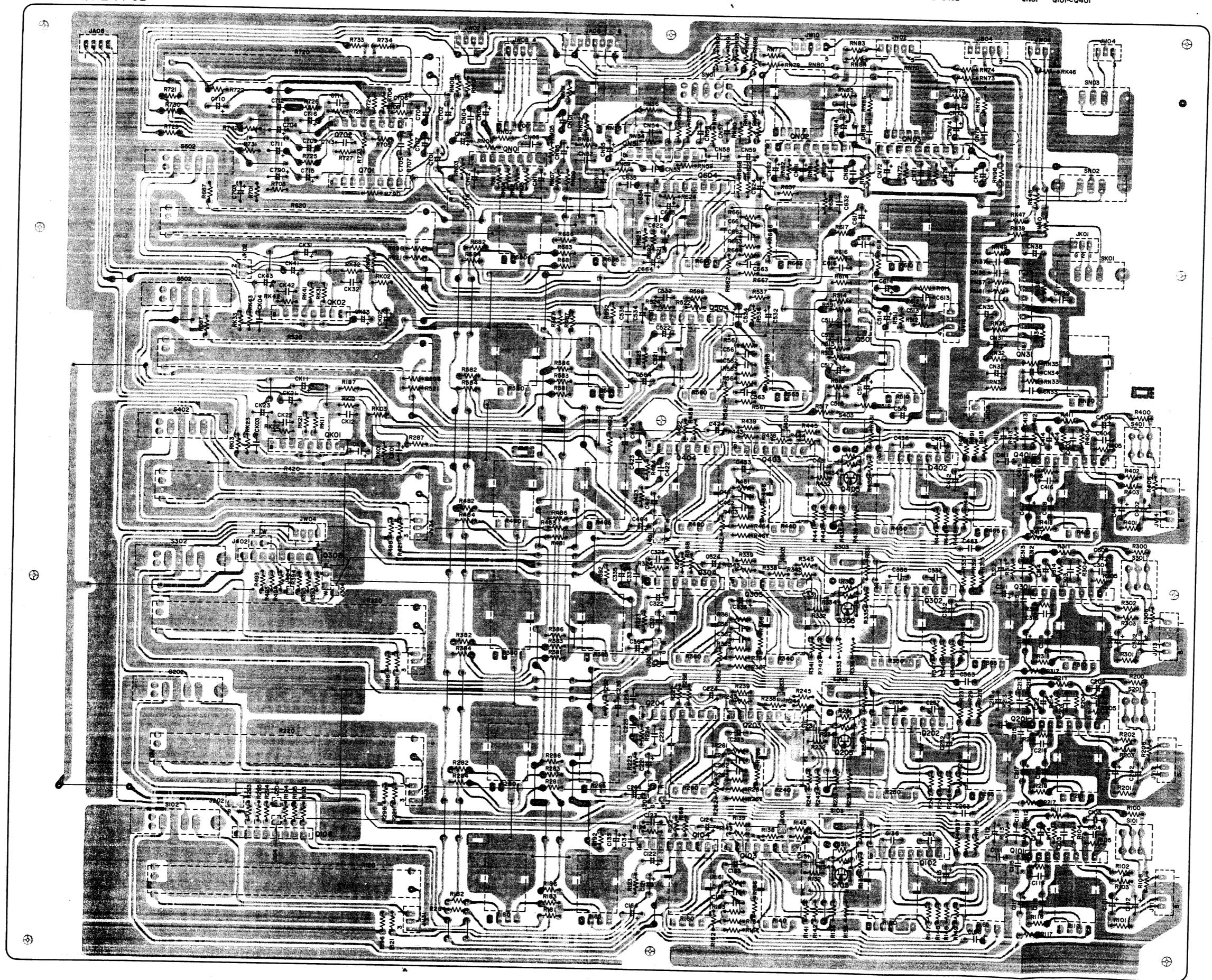
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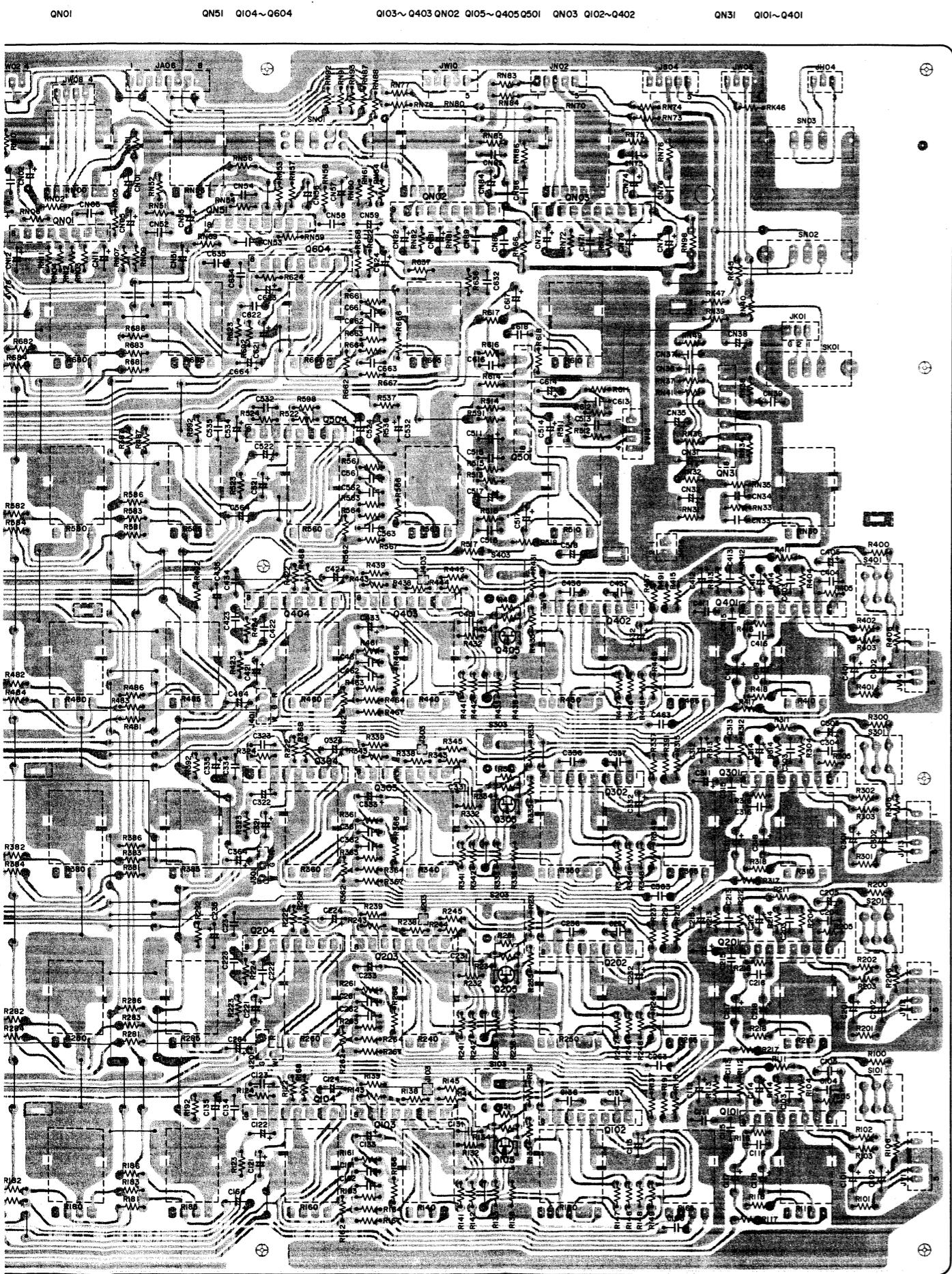
QNO1

QN51 Q104~Q604

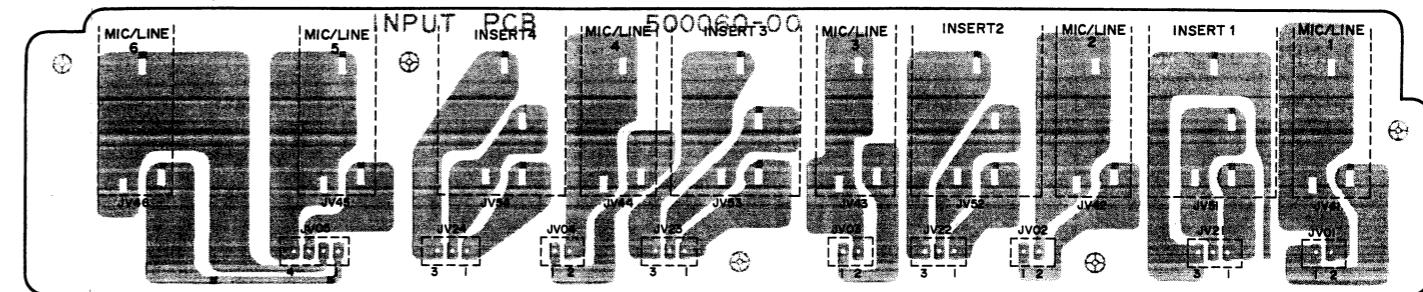
Q103~Q403 QN02 Q105~Q405 Q501 QN03 Q102~Q402

QN31 Q101~Q401

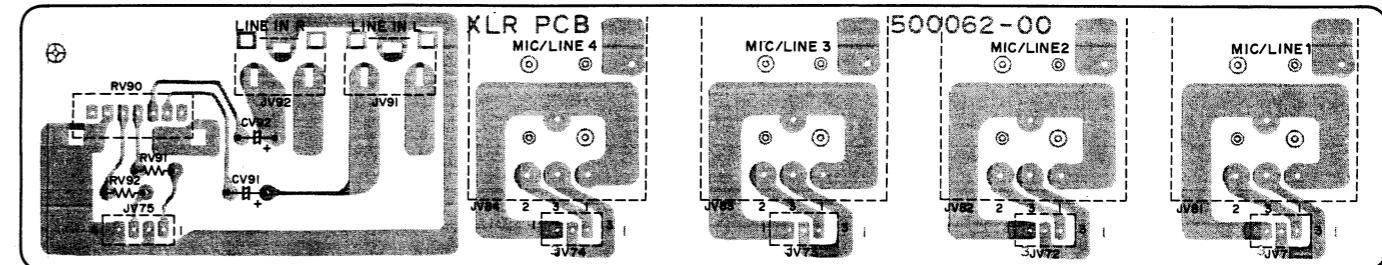




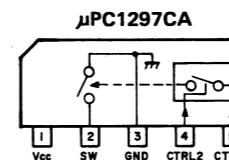
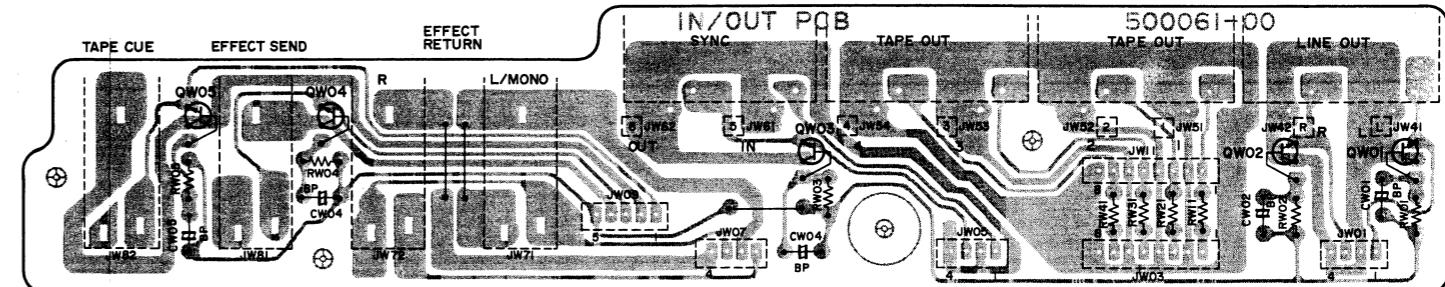
PV00 INPUT JACK PCB



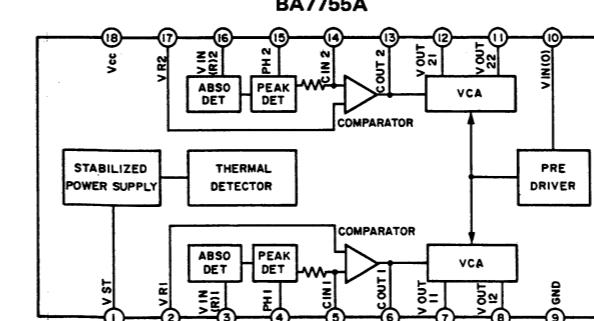
PVOI XLR JACK PCB



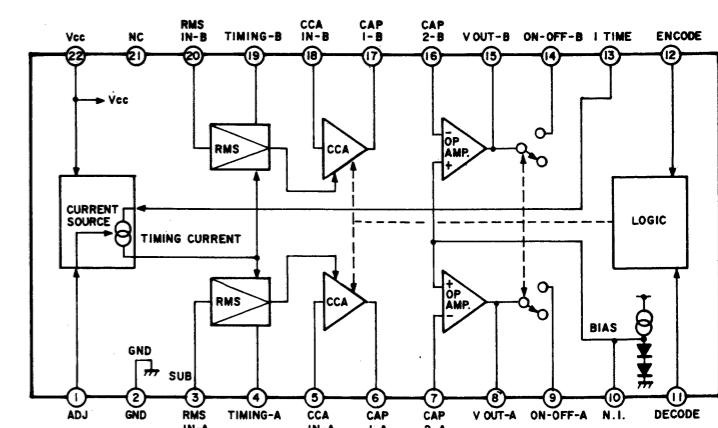
PW00 INPUT/OUT JACK PCB



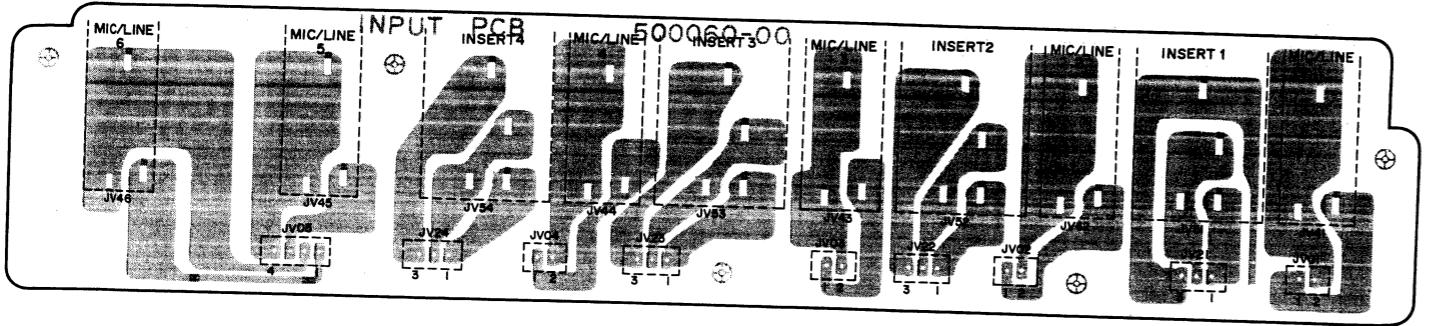
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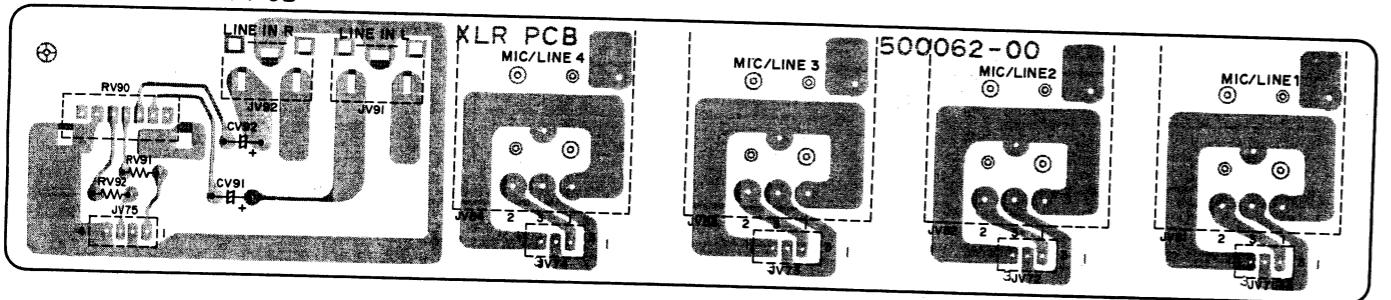
AN6291



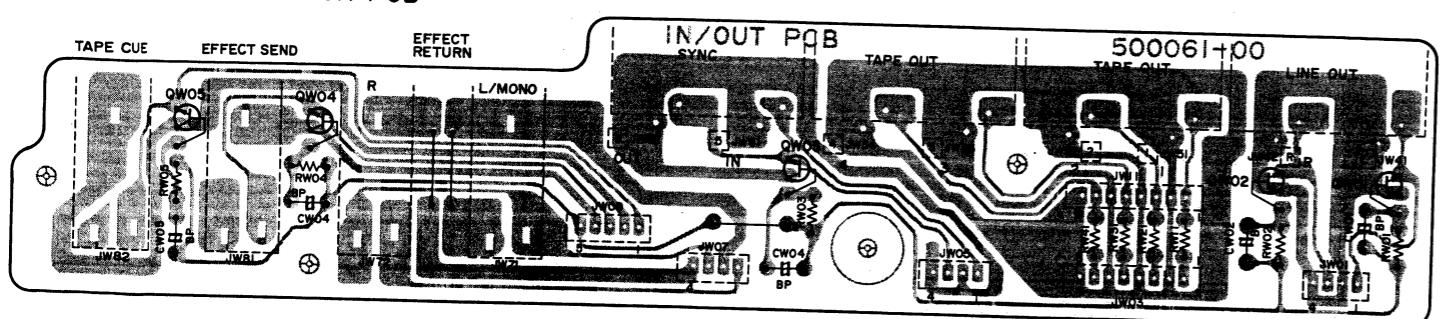
PVOO INPUT JACK PCB



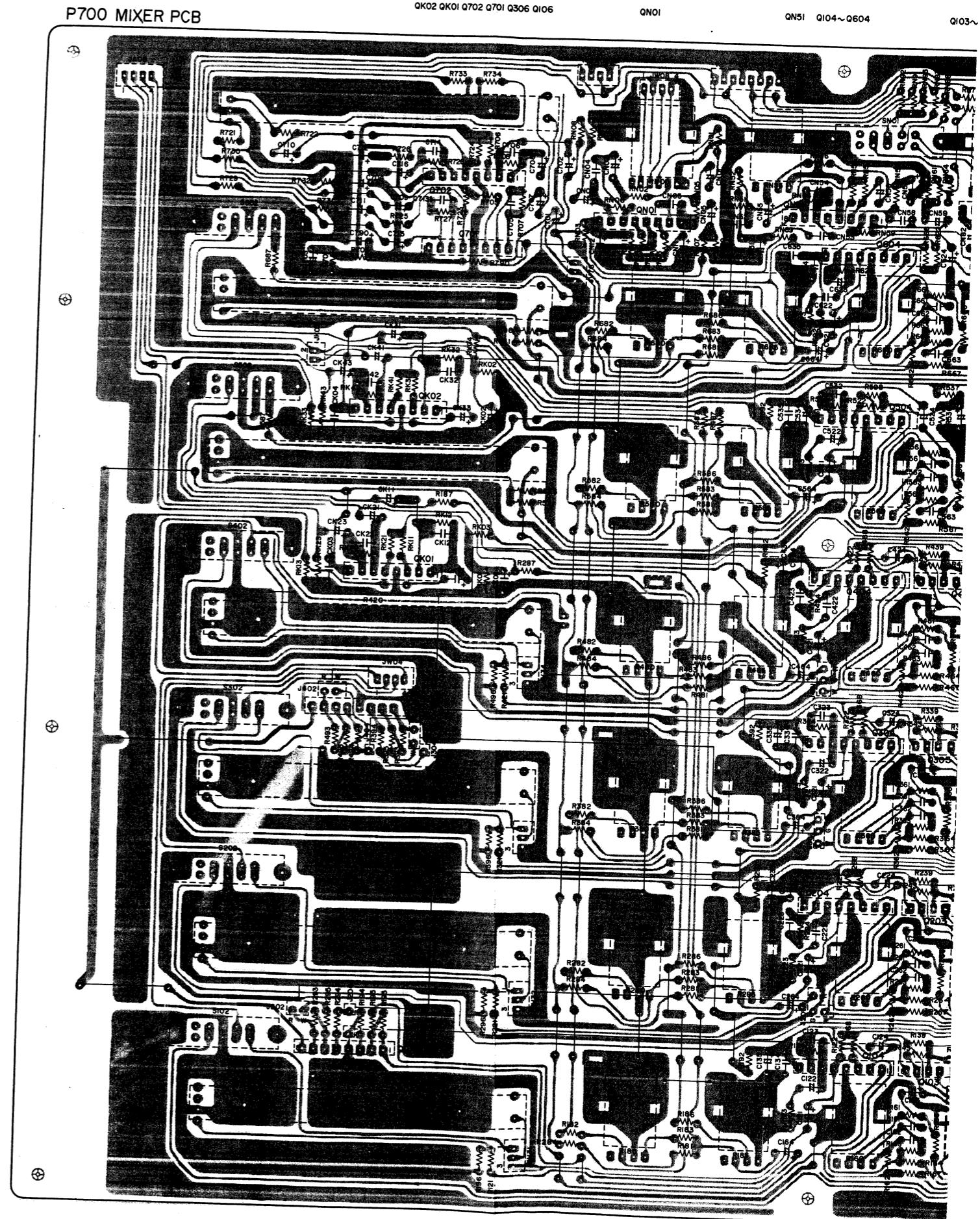
PVOI XLR JACK PCB



PWOO INPUT/OUT JACK PCB



P700 MIXER PCB



P700 MIXER PCB

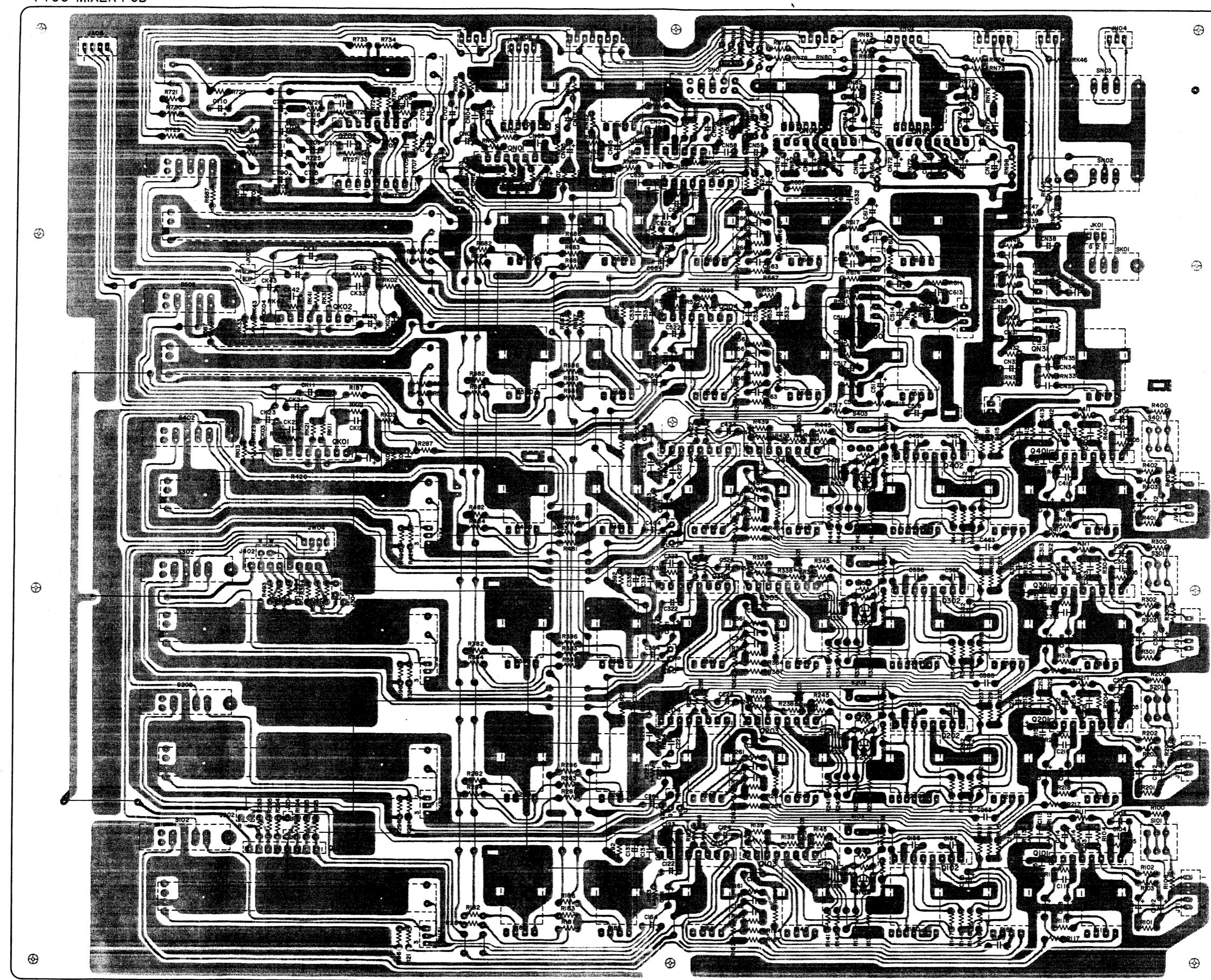
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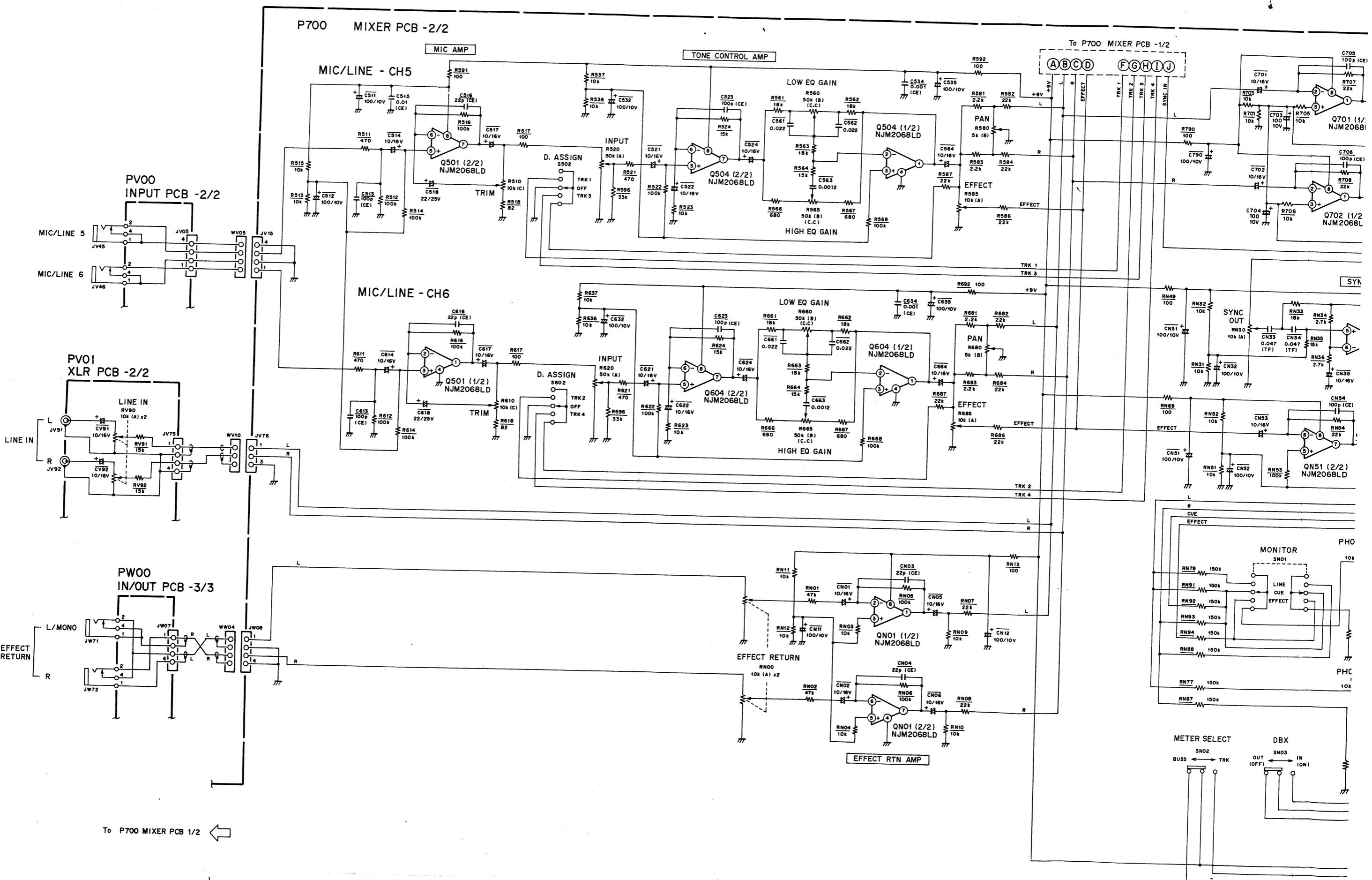
QNO1

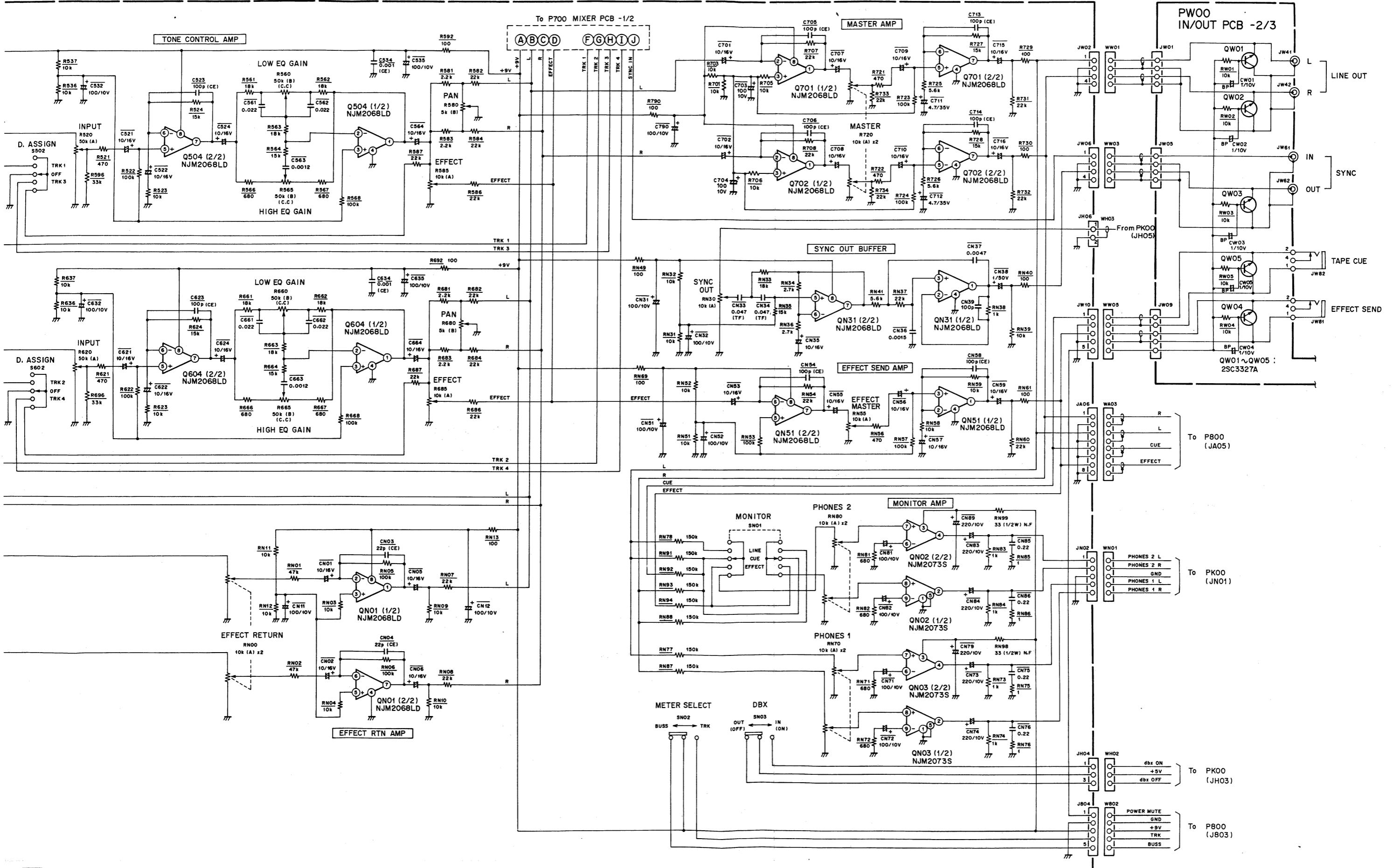
QN51 Q104~Q604

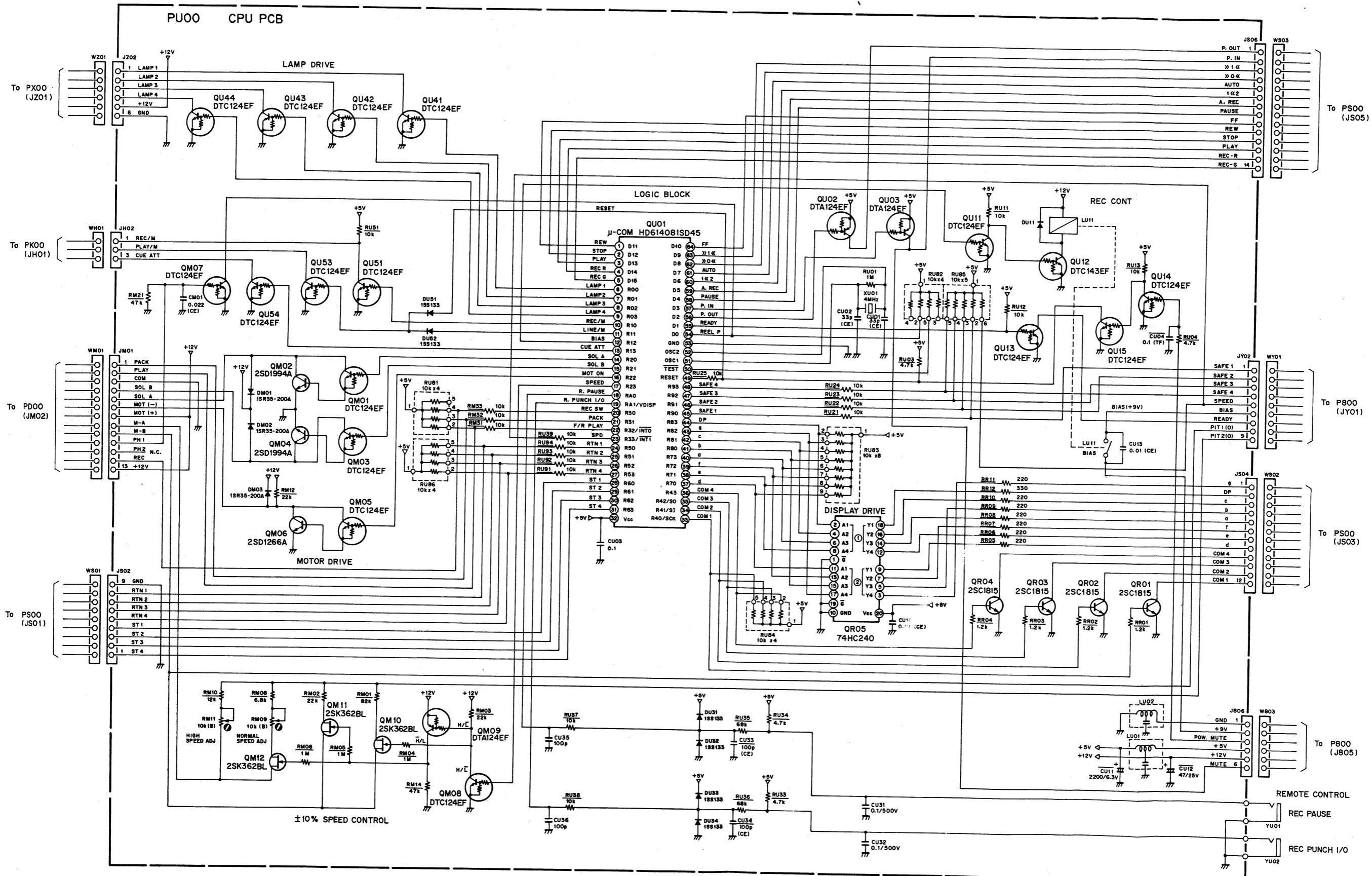
Q103~Q403 QN02 Q105~Q405 Q501 QN03 Q102~Q402

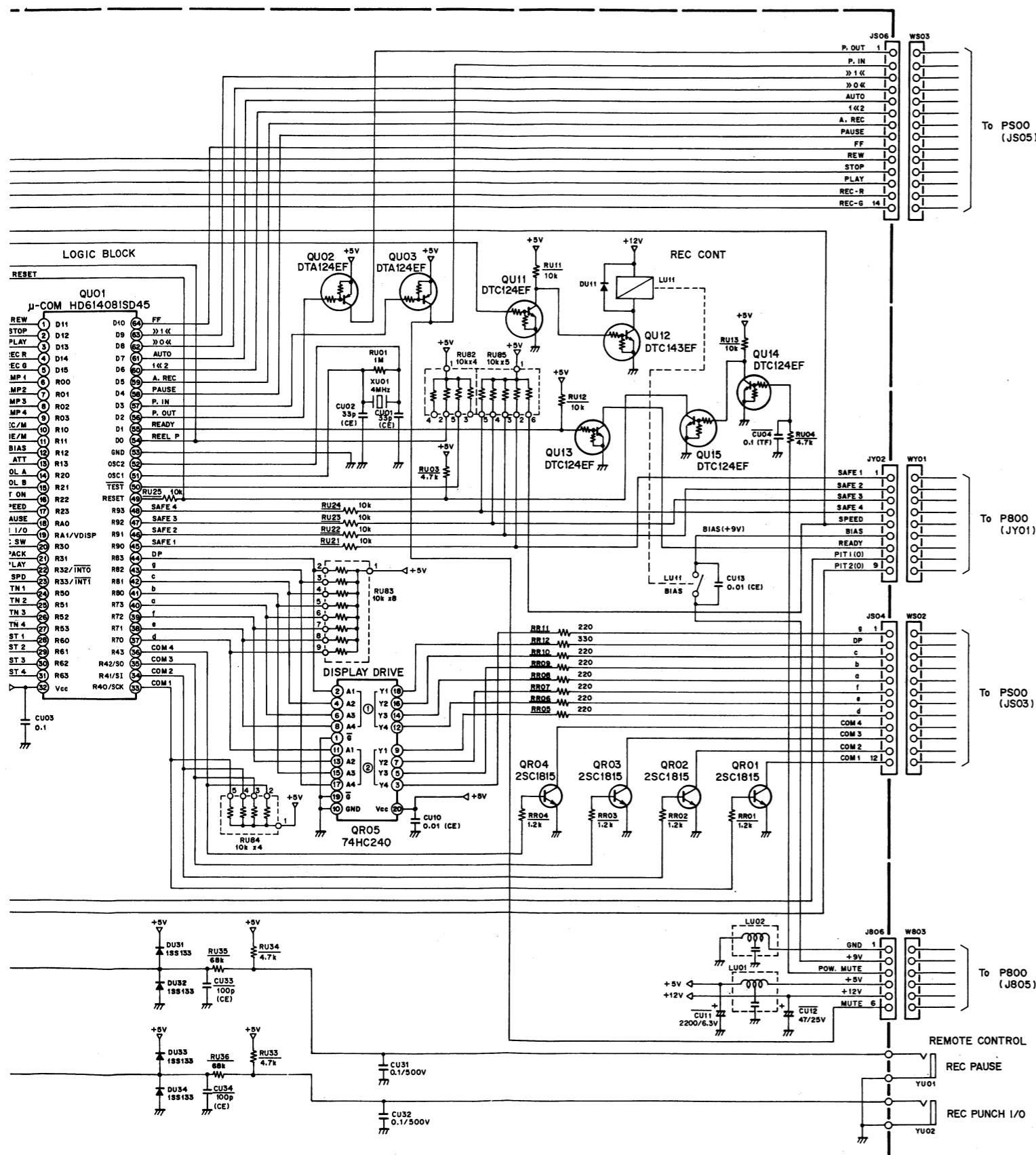
QN31 Q101~Q401





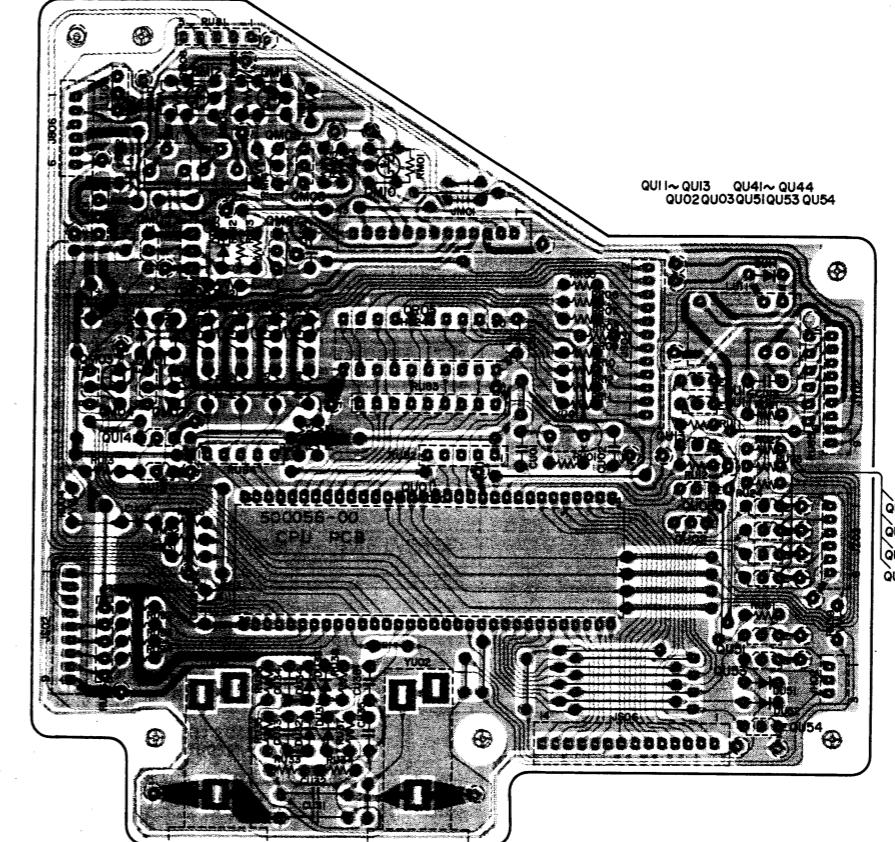






QM01 QM02 QM07 QM09  
 QM03 QM05 QM06 QM12 QM11 QM08 QM10 QR05  
 QM04 QUI4 QUI5 QM02 QR01~QR04 QU01

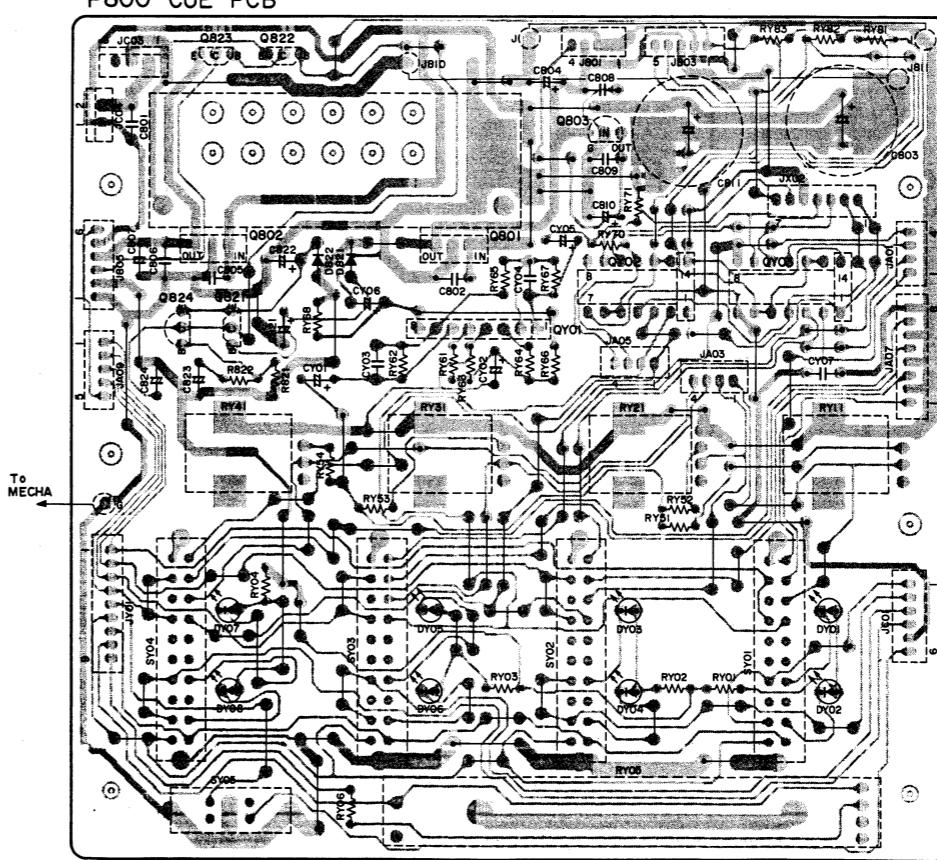
PUO CPU PCI

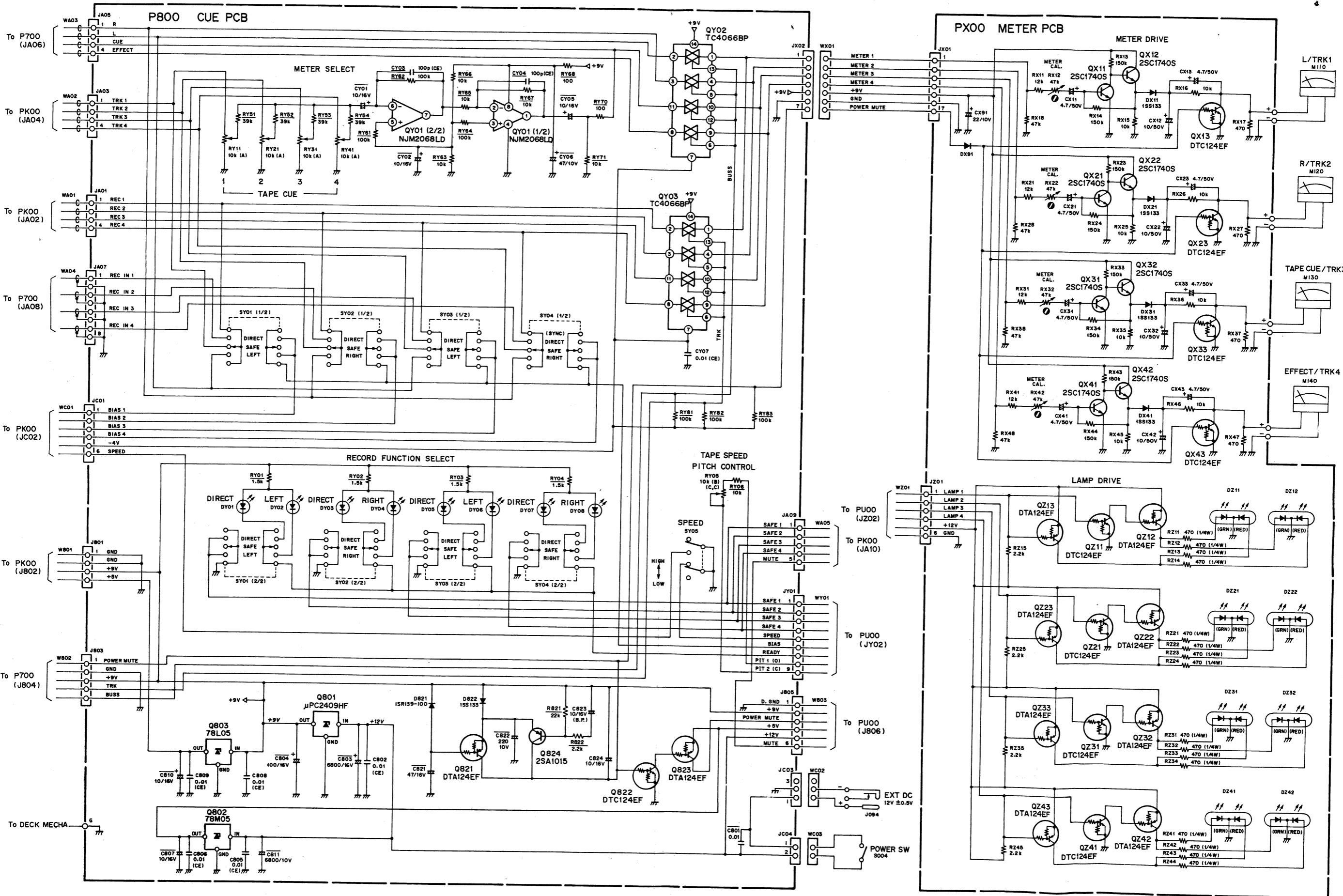


**Q824 Q823 Q821 Q802 Q822**

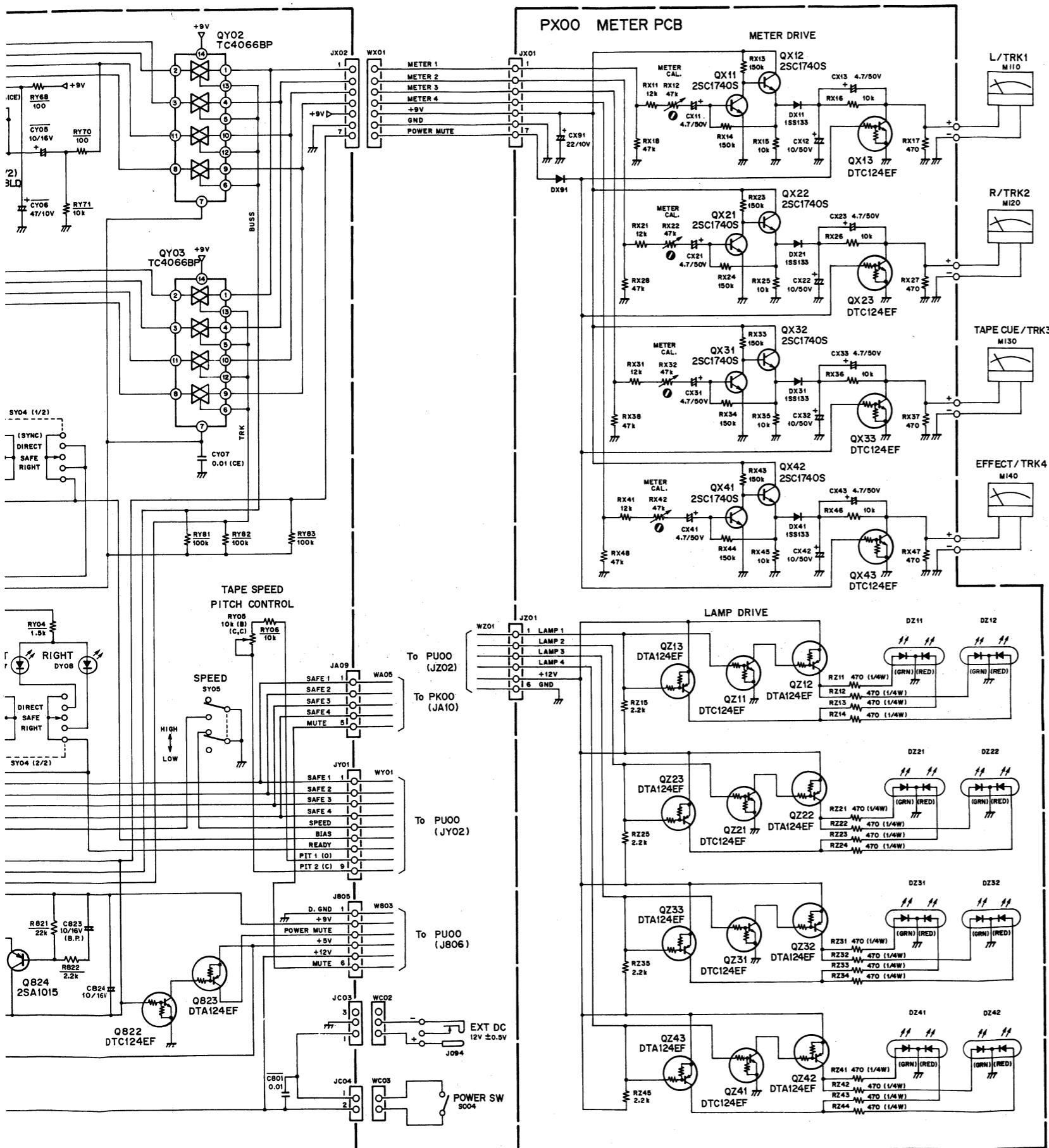
**Q801 QY01 Q803 QY02**

QY03





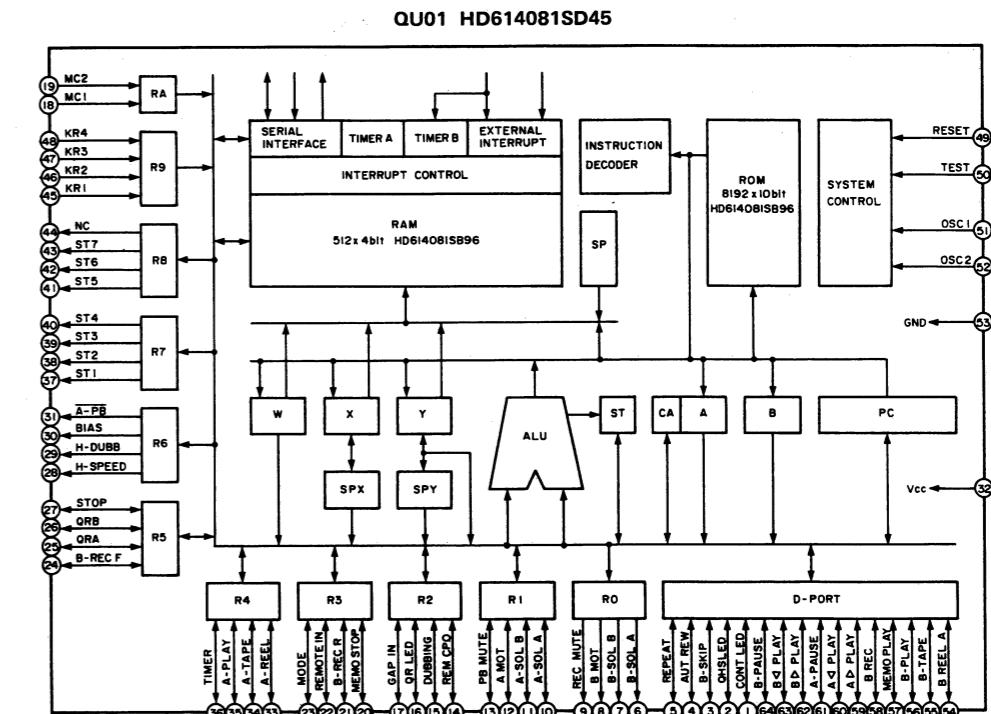
| 12. MIC |     |
|---------|-----|
| PIN NO. | SYN |
| 1       | D1  |
| 2       | D1  |
| 3       | D1  |
| 4       | D1  |
| 5       | D1  |
| 6       | R0  |
| 7       | R0  |
| 8       | R0  |
| 9       | R1  |
| 10      | R1  |
| 11      | R1  |
| 12      | R1  |
| 13      | R1  |
| 14      | R2  |
| 15      | R2  |
| 16      | R2  |
| 17      | R2  |
| 18      | RA  |
| 19      | RA  |
| 20      | R3  |
| 21      | R3  |
| 22      | R3  |
| 23      | R3  |
| 24      | R5  |
| 25      | R5  |
| 26      | R5  |
| 27      | R5  |
| 28      | R6  |
| 29      | R6  |
| 30      | R6  |
| 31      | R6  |
| 32      | Vc  |

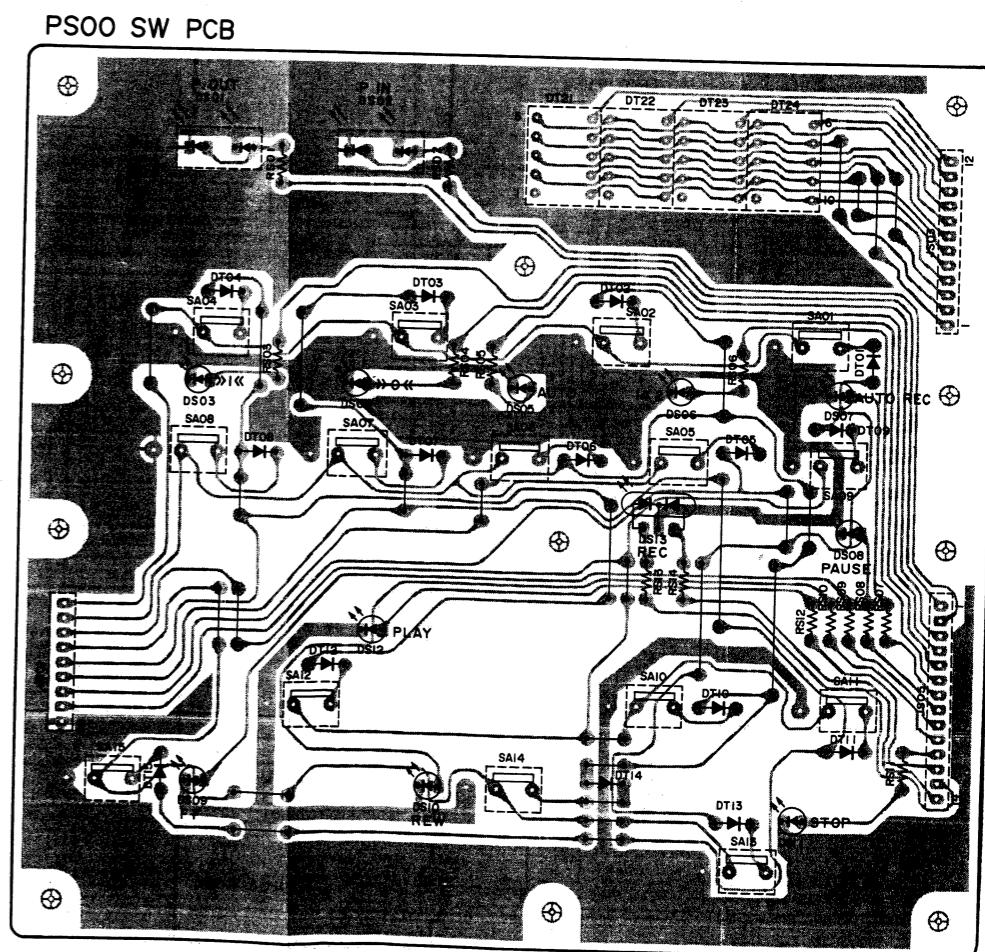
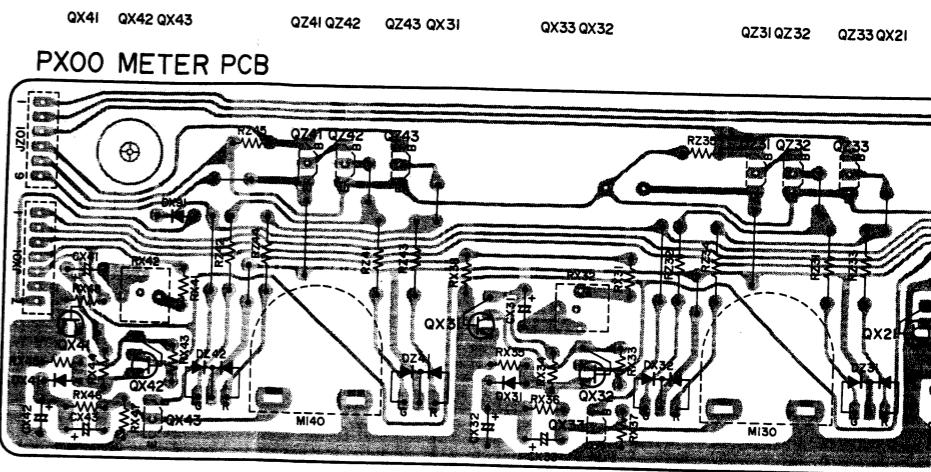
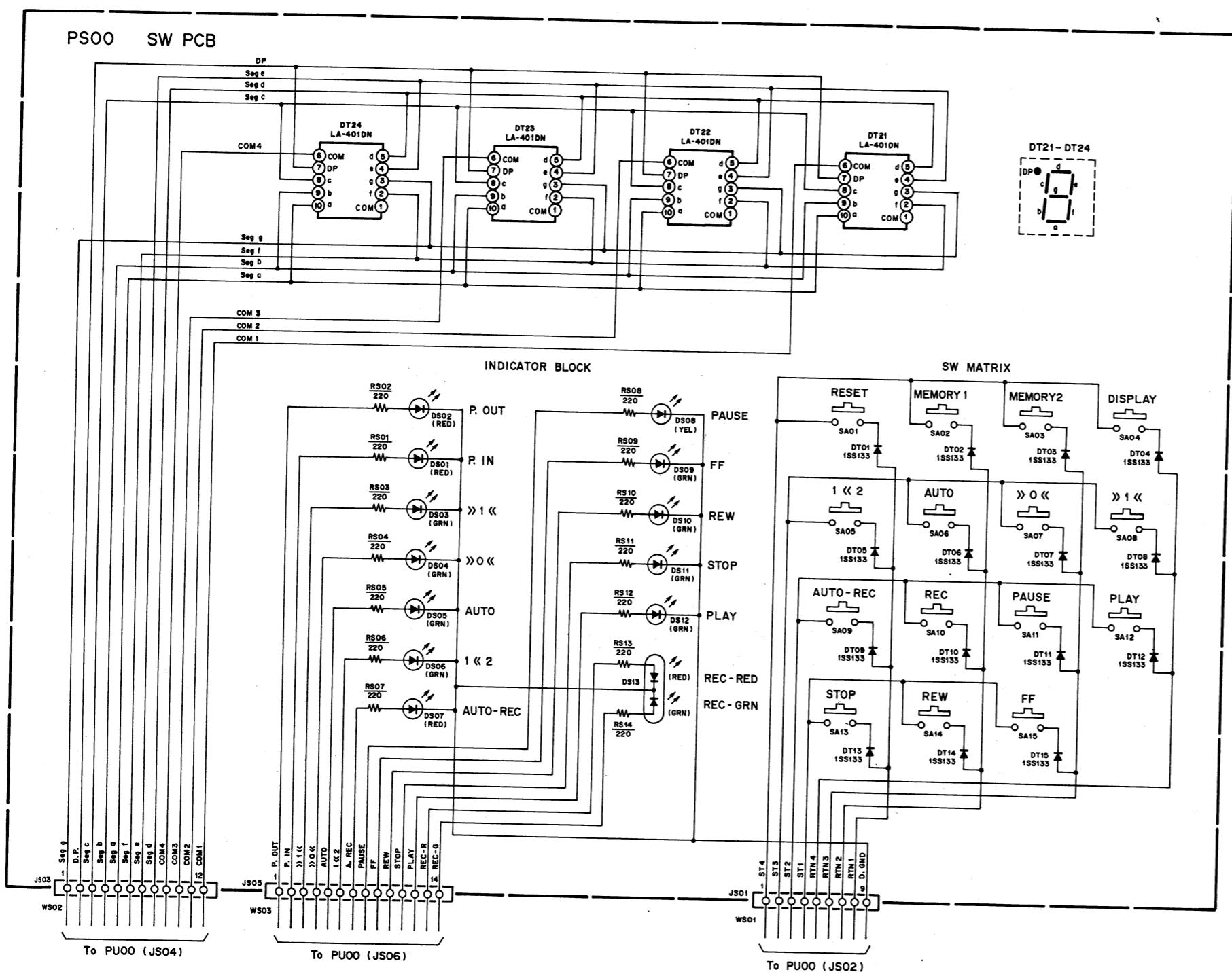


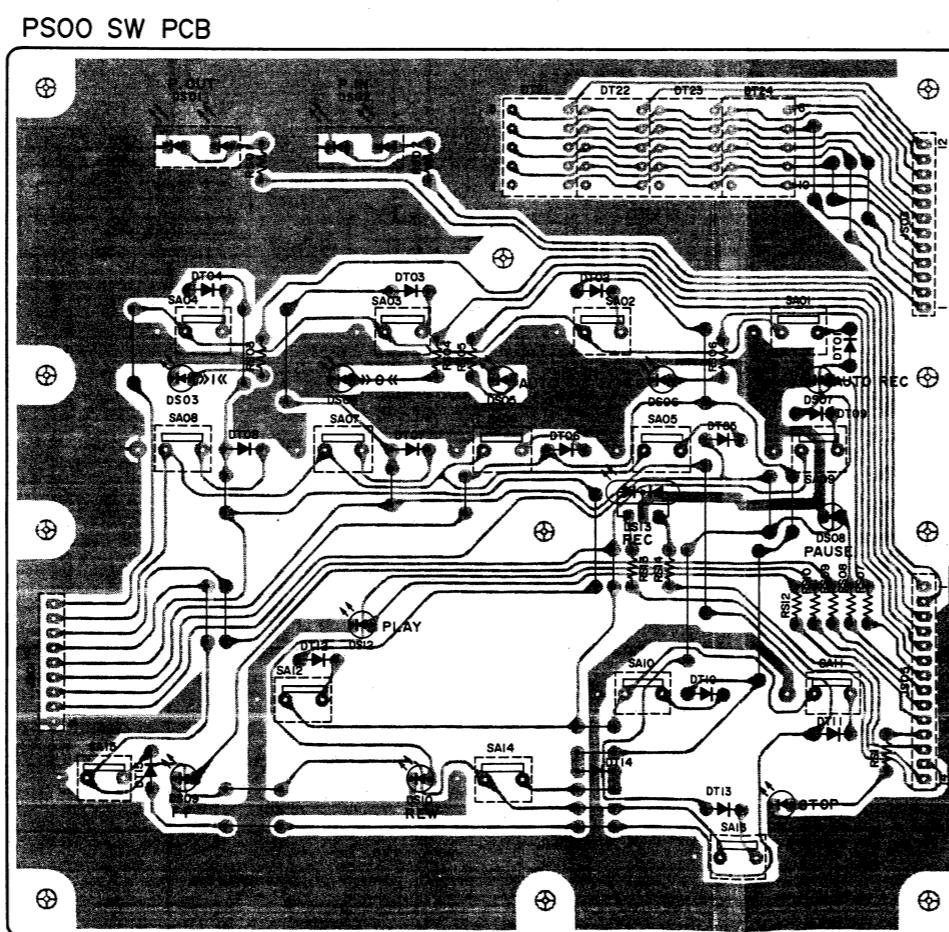
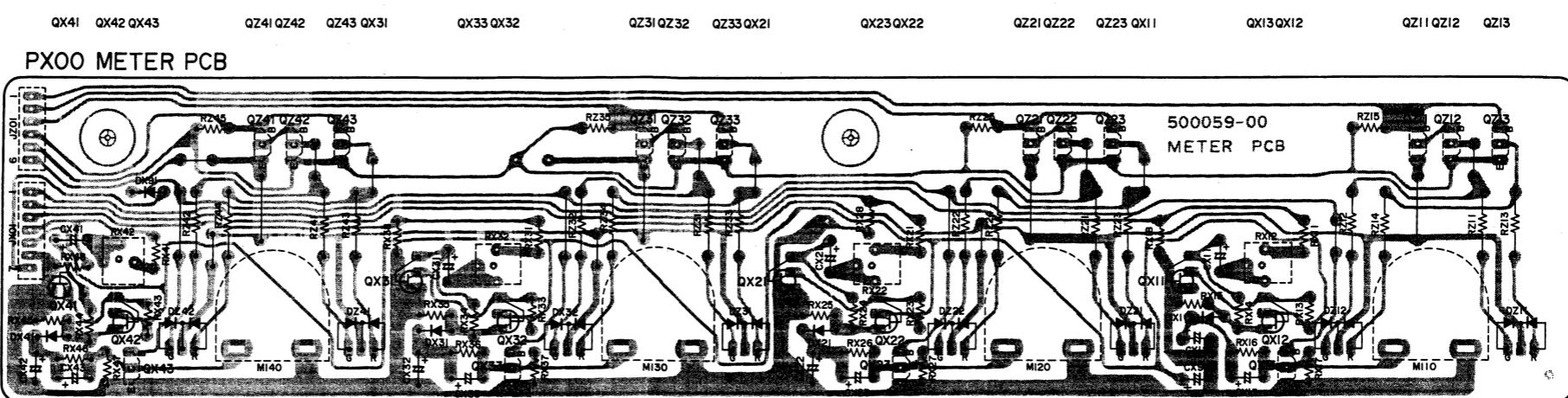
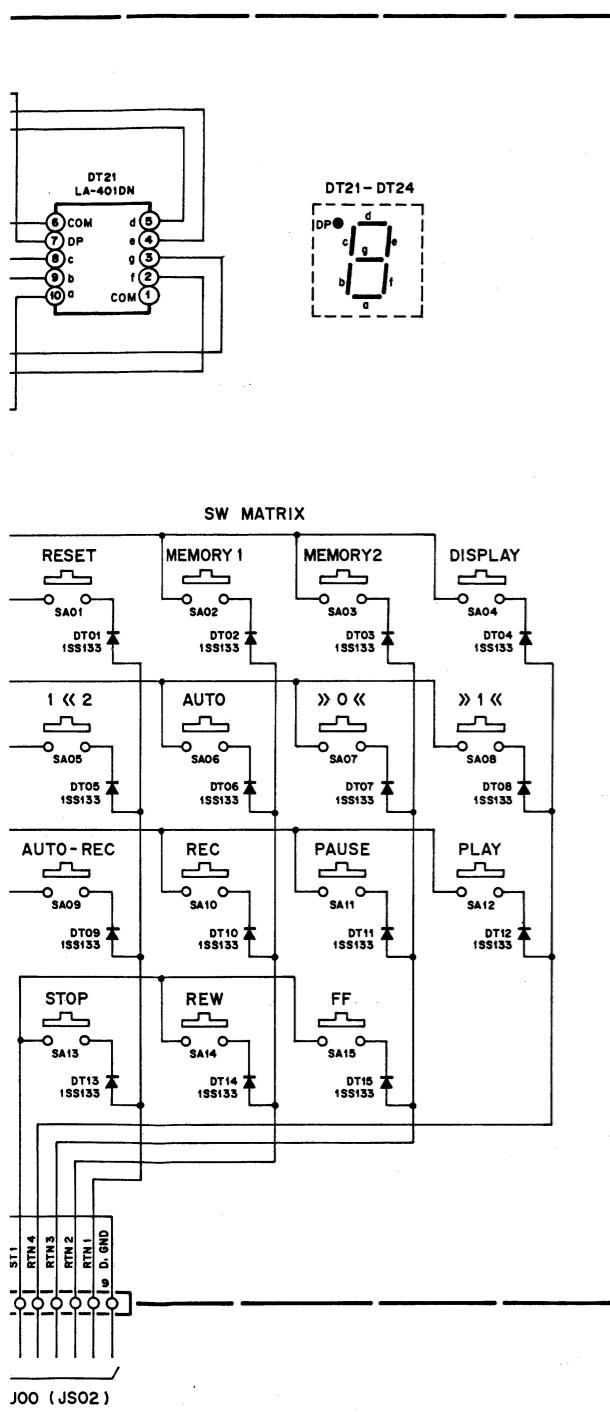
## 12. MICRO-PROCESSOR I/O PINS AND THEIR FUNCTIONS

SYM NO. QU01 TYPE NO. HD614081SD45

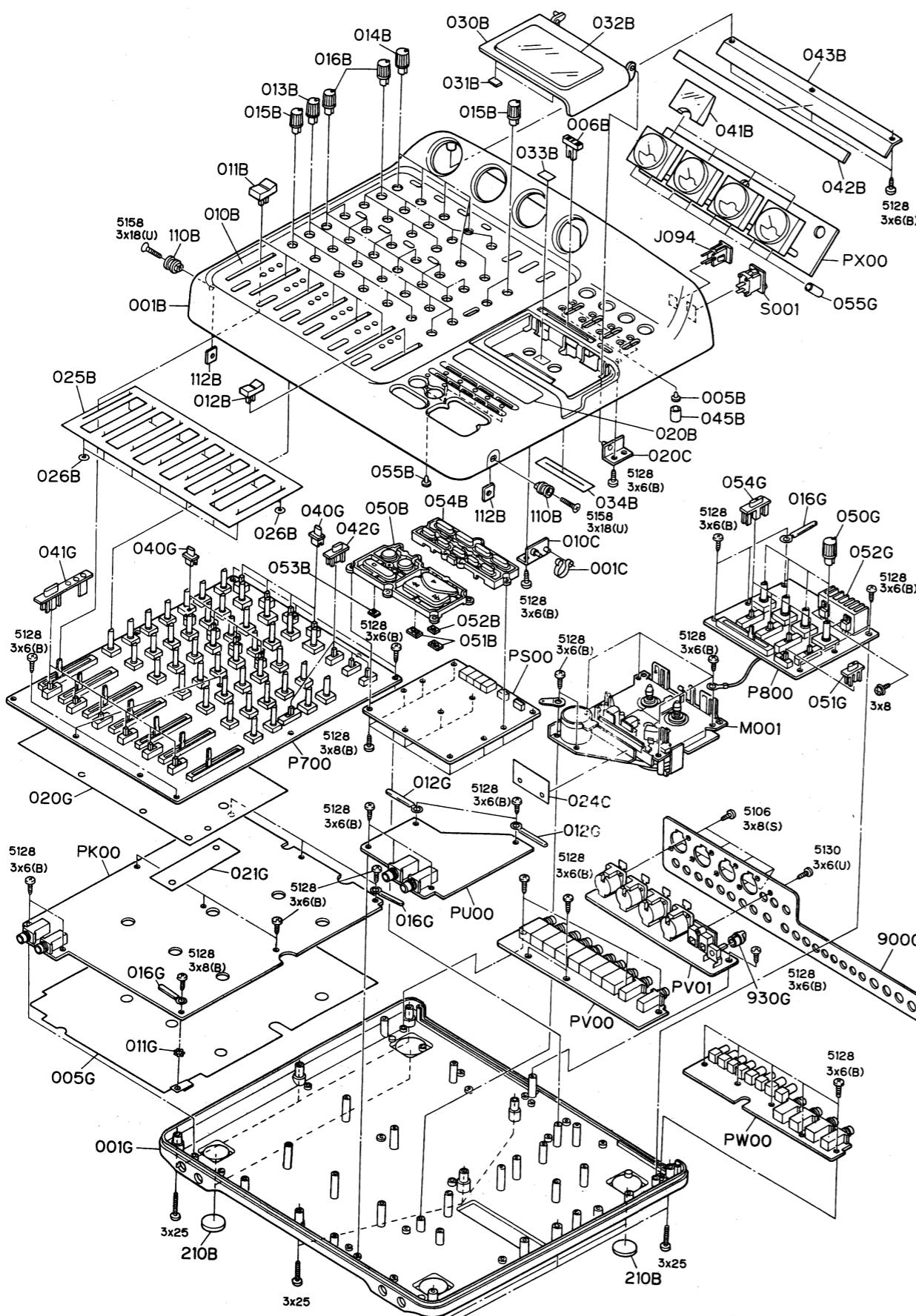
| PIN NO. | PORT NAME | I/O          | ACT | FUNCTION                        |
|---------|-----------|--------------|-----|---------------------------------|
| 1       | D11       | REW          | O H | LED-OUT (RWD)                   |
| 2       | D12       | STOP         | O H | LED-OUT (STOP)                  |
| 3       | D13       | PLAY         | O H | LED-OUT (PLAY)                  |
| 4       | D14       | REC-R        | O H | LED-OUT (REC-RED)               |
| 5       | D15       | REC-G        | O H | LED-OUT (REC-GREEN)             |
| 6       | R00       | LAMP 1       | O H | VU METER LAMP 1                 |
| 7       | R01       | LAMP 2       | O H | VU METER LAMP 2                 |
| 8       | R02       | LAMP 3       | O H | VU METER LAMP 3                 |
| 9       | R03       | LAMP 4       | O H | VU METER LAMP 4                 |
| 10      | R10       | REC-M        | O H | RECORD MUTE CONTROL             |
| 11      | R11       | LINE-M       | O H | PLAY MUTE CONTROL               |
| 12      | R12       | BIAS         | O H | BIAS OUT CONTROL                |
| 13      | R13       | CUE-ATT      | O H | FAST CUEING ATTENUATION CONTROL |
| 14      | R20       | SOL-A        | O H | SOLENOID DRIVE A                |
| 15      | R21       | SOL-B        | O H | SOLENOID DRIVE B                |
| 16      | R22       | MOTOR ON     | O H | MOTOR ON/OFF CONTROL            |
| 17      | R23       | SPEED        | O H | TAPE SPEED NORMAL/HIGH CONTROL  |
| 18      | RA0       | R. PAUSE     | I L | REMOTE PAUSE INPUT              |
| 19      | RA1       | R. PUNCH I/O | I L | REMOTE PUNCH-IN/OUT INPUT       |
| 20      | R30       | REC SW       | I L | RECORD ENABLE                   |
| 21      | R31       | PACK         | I L | TAPE IN                         |
| 22      | R32       | F/R PLAY     | I L | FF. REV. PLAY SW                |
| 23      | R33       | SPD          | I H | TAPE SPEED NORMAL/HIGH INPUT    |
| 24      | R50       | RTN 1        | I — | KEY MATRIX SIGNAL (IN)          |
| 25      | R51       | RTN 2        | I — |                                 |
| 26      | R52       | RTN 3        | I — |                                 |
| 27      | R53       | RTN 4        | I — |                                 |
| 28      | R60       | ST1          | O — | KEY MATRIX SIGNAL (OUT)         |
| 29      | R61       | ST2          | O — |                                 |
| 30      | R62       | ST3          | O — |                                 |
| 31      | R63       | ST4          | O — |                                 |
| 32      | VCC       | —            | —   | POWER SUPPLY (+5V)              |
| 33      | R40/SCK   | COM1         | O H | DYNAMIC DISPLAY D4 DIGIT        |
| 34      | R41/S1    | COM2         | O H | DYNAMIC DISPLAY D3 DIGIT        |
| 35      | R42/S0    | COM3         | O H | DYNAMIC DISPLAY D2 DIGIT        |
| 36      | R43       | COM4         | O H | DYNAMIC DISPLAY D1 DIGIT        |
| 37      | R70       | SEG d        | O L | DYNAMIC DISPLAY SEGMENT d       |
| 38      | R71       | SEG e        | O L | DYNAMIC DISPLAY SEGMENT e       |
| 39      | R72       | SEG f        | O L | DYNAMIC DISPLAY SEGMENT f       |
| 40      | R73       | SEG g        | O L | DYNAMIC DISPLAY SEGMENT g       |
| 41      | R80       | SEG b        | O L | DYNAMIC DISPLAY SEGMENT b       |
| 42      | R81       | SEG c        | O L | DYNAMIC DISPLAY SEGMENT c       |
| 43      | R82       | SEG g        | O L | DYNAMIC DISPLAY SEGMENT g       |
| 44      | R83       | D.P.         | O L | DYNAMIC DISPLAY DESIMAL POINT   |
| 45      | R90       | SAFE 1       | I L | REC SELECT-1 SAFE INPUT         |
| 46      | R91       | SAFE 2       | I L | REC SELECT-2 SAFE INPUT         |
| 47      | R92       | SAFE 3       | I L | REC SELECT-3 SAFE INPUT         |
| 48      | R93       | SAFE 4       | I L | REC SELECT-4 SAFE INPUT         |
| 49      | RESET     | —            | —   | POWER ON RESET                  |
| 50      | TEST      | —            | —   | TEST MODE                       |
| 51      | OSC1      | —            | —   | 4.0 MHz                         |
| 52      | OSC2      | —            | —   |                                 |
| 53      | GND       | —            | —   | GROUND                          |
| 54      | D0        | REEL P.      | I L | REEL PULSES                     |
| 55      | D1        | READY        | O H | LED-OUT (REC SELECT LED)        |
| 56      | D2        | P-OUT        | O H | LED-OUT (PUNCH-OUT)             |
| 57      | D3        | P-IN         | O H | LED-OUT (PUNCH-IN)              |
| 58      | D4        | PAUSE        | O H | LED-OUT (PAUSE)                 |
| 59      | D5        | A. REC       | O H | LED-OUT (AUTO REC)              |
| 60      | D6        | 1 « 2        | O H | LED-OUT (AUTO REWIND)           |
| 61      | D7        | AUTO         | O H | LED-OUT (AUTO PLAY)             |
| 62      | D8        | » 0 «        | O H | LED-OUT (SEARCH ZERO)           |
| 63      | D9        | » 1 «        | O H | LED-OUT (SEARCH MEMORY-1)       |
| 64      | D10       | FF           | O H | LED-OUT (F. FWD)                |







### 13. EXPLODED VIEWS AND PARTS LIST



## 14. ELECTRICAL PARTS LIST

### ASSIGNMENT OF COMMON PARTS CODES.

#### RESISTOR

R \* \* : (1) GD05 xxx 140, Carbon film fixed resistor, ± 5% 1/4W

R \* \* : (2) GD05 xxx 160, Carbon film fixed resistor, ± 5% 1/6W

① — Resistance value

Examples :

① Resistance value

0.1 Ω...001 10 Ω...100 1k Ω...102 100k Ω...104  
0.5 Ω...005 18 Ω...180 2.7k Ω...272 680k Ω...684  
1 Ω...010 100 Ω...101 10k Ω...103 1M Ω...105  
6.8 Ω...068 390 Ω...391 22k Ω...223 4.7M Ω...475

(Note) Please distinguish 1/4W from 1/6W by the shape of parts used actually.

#### C \* \* : CERAMIC CAP.

(1) DD1x xxx 370, Ceramic capacitor

① ②

Disc type

Temp.coeff.P350~N1000.50V

Capacity value

Tolerance

Examples

① Tolerance (Capacity deviation)

± 0.25pF ... 0

± 0.5pF ... 1

± 5% ... 5

\* Tolerance of COMMON PARTS handled here are as follows :

0.5pF~ 5pF...± 0.25pF

6pF~ 10pF...± 0.5pF

12pF~ 560pF...± 5%

② Capacity value

0.5pF...005 3pF...030 100pF...101

1pF...010 10pF...100 220pF...221

1.5pF...015 47pF...470 560pF...561

#### C \* \* : CERAMIC CAP.

(1) DK16 xxx 300, High dielectric constant ceramic

①

Disc type

Temp.chara. 2B4, 50V

Capacity value

Examples

② Capacity value

100pF...10t 1000pF...102 10000pF...103

470pF...471 2200pF...222

#### C \* \* : ELECTROLY CAP. ( $\frac{1}{2}$ ), FILM CAP. ( $\frac{1}{4}$ )

(1) EA xxxx xx 10, Electrolytic capacitor

One-way lead type, Tolerance ± 20%

① ②

Working voltage

Capacity value

Examples

① Capacity value

01. μ F...104 4.7 μ F...475 100 μ F...107

0.33 μ F...334 10 μ F...106 330 μ F...337

1 μ F...105 22 μ F...226 1100 μ F...108

2200 μ F...228

② Working voltage

6.3V...006 25V...025

10V...010 35V...035

16V...016 50V...050

(2) DF15 xxx 350, Plastic film capacitor

One-way type, Mylar ± 5% 50V

①

Capacity value

Examples

① Capacity value

0.001 μ F (1000pF)...102 0.1 μ F...104

0.0018 μ F...182 0.56 μ F...564

0.01 μ F...103 1 μ F...105

0.015 μ F...153

| REF.<br>DESIG.                           | PART NO.       | DESCRIPTION                |
|--|----------------|----------------------------|
| <b>PK00-REC / PLAY AMP CIRCUIT BOARD</b> |                |                            |
| <b>PK00-CAPACITORS</b>                   |                |                            |
| CA12                                     | 4822 121 42708 | Film 330pF ±5%             |
| CA22                                     | 4822 121 70307 | Film 270pF ±5%             |
| CA52                                     | 4822 124 80516 | Elect 10μF 35V (LL)        |
| CA54                                     | 4822 121 43381 | Film 470pF ±5%             |
| CB12                                     | 4822 121 42708 | Film 330pF ±5%             |
| CB22                                     | 4822 121 70307 | Film 270pF ±5%             |
| CB54                                     | 4822 121 43381 | Film 470pF ±5%             |
| CC12                                     | 4822 121 42708 | Film 330pF ±5%             |
| CC22                                     | 4822 121 70307 | Film 270pF ±5%             |
| CC52                                     | 4822 124 80516 | Elect 10μF 35V (LL)        |
| CC54                                     | 4822 121 43381 | Film 470pF ±5%             |
| CD12                                     | 4822 121 42708 | Film 330pF ±5%             |
| CD22                                     | 4822 121 70307 | Film 270pF ±5%             |
| CD52                                     | 4822 124 80516 | Elect 10μF 35V (LL)        |
| CD54                                     | 4822 121 43381 | Film 470pF ±5%             |
| CE01                                     | 4822 123 30375 | Film 820pF ±5%             |
| CE05                                     | 4822 121 42344 | Film 220pF ±5%             |
| CE06                                     | 4822 123 30375 | Film 820pF ±5%             |
| CE07                                     | 4822 121 70306 | Film 0.018μF ±5%           |
| CE11                                     | 4822 123 30048 | Film 0.01μF ±5%            |
| CE12                                     | 4822 121 43381 | Film 470pF ±5%             |
| CE29                                     | 4822 121 42708 | Film 330pF ±5%             |
| CE52                                     | 4822 124 80516 | Elect 10μF 35V (LL)        |
| CE57                                     | 4822 121 42466 | Film 390pF ±5%             |
| CF01                                     | 4822 123 30375 | Film 820pF ±5%             |
| CF05                                     | 4822 121 42344 | Film 220pF ±5%             |
| CF06                                     | 4822 123 30375 | Film 820pF ±5%             |
| CF07                                     | 4822 121 70306 | Film 0.018μF ±5%           |
| CF11                                     | 4822 123 30048 | Film 0.01μF ±5%            |
| CF12                                     | 4822 121 43381 | Film 470pF ±5%             |
| CF29                                     | 4822 121 42708 | Film 330pF ±5%             |
| CF52                                     | 4822 124 80516 | Elect 10μF 35V (LL)        |
| CF57                                     | 4822 121 42466 | Film 390pF ±5%             |
| CG01                                     | 4822 123 30375 | Film 820pF ±5%             |
| CG05                                     | 4822 121 42344 | Film 220pF ±5%             |
| CG06                                     | 4822 123 30375 | Film 820pF ±5%             |
| CG07                                     | 4822 121 70306 | Film 0.018μF ±5%           |
| CG11                                     | 4822 123 30048 | Film 0.01μF ±5%            |
| CG12                                     | 4822 121 43381 | Film 470pF ±5%             |
| CG29                                     | 4822 121 42708 | Film 330pF ±5%             |
| CG52                                     | 4822 124 80516 | Elect 10μF 35V (LL)        |
| CG57                                     | 4822 121 42466 | Film 390pF ±5%             |
| CH01                                     | 4822 124 21903 | Elect (B.P.) 1μF 50V       |
| CH81                                     | 4822 122 32486 | Ceramic 0.01μF +80% -20%   |
| CJ01                                     | 4822 123 30375 | Film 820pF ±5%             |
| CJ05                                     | 4822 121 42344 | Film 220pF ±5%             |
| CJ06                                     | 4822 123 30375 | Film 820pF ±5%             |
| CJ07                                     | 4822 121 70306 | Film 0.018μF ±5%           |
| CJ11                                     | 4822 123 30048 | Film 0.01μF ±5%            |
| CJ12                                     | 4822 121 43381 | Film 470pF ±5%             |
| CJ29                                     | 4822 121 42708 | Film 330pF ±5%             |
| CJ52                                     | 4822 124 80516 | Elect 10μF 35V (LL)        |
| CJ57                                     | 4822 121 42466 | Film 390pF ±5%             |
| CL05                                     | 4822 121 70308 | Film 0.027μF ±5%           |
| CL08                                     | 4822 122 32486 | Ceramic 0.01μF +80% -20%   |
| C902                                     | 4822 122 32486 | Ceramic 0.01μF +80% -20%   |
| C903                                     | 4822 121 43379 | Film 0.015μF ±5%           |
| C906                                     | 4822 122 32486 | Ceramic 0.01μF +80% -20%   |
| C907                                     | 4822 122 32486 | Ceramic 0.01μF +80% -20%   |
| <b>PK00-RESISTORS</b>                    |                |                            |
| RA10                                     | 4822 100 20681 | 2.2K Ω, Trimming; PB Level |
| RA12                                     | 4822 100 20681 | 2.2K Ω, Trimming; PB EQ    |
| RA50                                     | 4822 100 20681 | 2.2K Ω, Trimming; DEC Time |
| RA61                                     | 4822 116 82751 | 1K Ω ±1% 1/6W              |
| RB10                                     | 4822 100 20681 | 2.2K Ω, Trimming; PB Level |
| RB12                                     | 4822 100 20681 | 2.2K Ω, Trimming; PB EQ    |

| REF.<br>DESIG.                           | PART NO.       | DESCRIPTION                  |
|--|----------------|------------------------------|
| <b>PK00-REC / PLAY AMP CIRCUIT BOARD</b> |                |                              |
| <b>PK00-CAPACITORS</b>                   |                |                              |
| RC10                                     | 4822 100 20681 | 2.2K Ω, Trimming; PB Level   |
| RC12                                     | 4822 100 20681 | 2.2K Ω, Trimming; PB EQ      |
| RC50                                     | 4822 100 20681 | 2.2K Ω, Trimming; DEC Time   |
| RC61                                     | 4822 116 82751 | 1K Ω ±1% 1/6W                |
| RD10                                     | 4822 100 20681 | 2.2K Ω, Trimming; PB Level   |
| RD12                                     | 4822 100 20681 | 2.2K Ω, Trimming; PB EQ      |
| RE01                                     | 4822 100 11351 | 10K Ω, Trimming; Bias TRK 1  |
| RE30                                     | 4822 100 11351 | 10K Ω, Trimming; REC Level   |
| RE50                                     | 4822 100 20681 | 2.2K Ω, Trimming; NEC Time   |
| RE61                                     | 4822 116 82751 | 1K Ω ±1% 1/6W                |
| RF01                                     | 4822 100 11351 | 10K Ω, Trimming; Bias TRK 2  |
| RF30                                     | 4822 100 11351 | 10K Ω, Trimming; REC Level   |
| RG01                                     | 4822 100 11351 | 10K Ω, Trimming; Bias TRK 3  |
| RG30                                     | 4822 100 11351 | 10K Ω, Trimming; REC Level   |
| RG50                                     | 4822 100 20681 | 2.2K Ω, Trimming; NEC Time   |
| RG61                                     | 4822 116 82751 | 1K Ω ±1% 1/6W                |
| RH51                                     | 4822 100 11351 | 10K Ω, Trimming; SYNC Cancel |

| REF.<br>DESIG. | PART NO.       | DESCRIPTION                               | REF.<br>DESIG. | PART NO.       | DESCRIPTION                         |
|----------------|----------------|---|----------------|----------------|-------------------------------------|
| QL01           | 4822 130 63282 | Transistor 2SC3377                        |                |                | PU00-CPU CIRCUIT BOARD              |
| QH51           | 4822 209 32315 | IC NJM2068L-D                             |                |                | PU00-CAPACITORS                     |
| Q901           | 4822 130 63282 | Transistor 2SC3377                        | CM01           | 4822 122 30103 | Ceramic 0.022µF +80% -20%           |
|                |                | <b>PK00-MISCELLANEOUS</b>                 | CU03           | 4822 122 40617 | Ceramic,stocked 0.1µF +80% 20%      |
| LA01           | 4822 153 70064 | Choke Coil 8mH                            | CU10           | 4822 122 32486 | Ceramic 0.01µF +80% -20%            |
| LA02           | 4822 153 70064 | Choke Coil 8mH                            | CU13           | 4822 122 32486 | Ceramic 0.01µF +80% -20%            |
| LB01           | 4822 153 70064 | Choke Coil 8mH                            |                |                | <b>PU00-RESISTORS</b>               |
| LB02           | 4822 153 70064 | Choke Coil 8mH                            | RM09           | 4822 100 11351 | 10K Ω (B), Trimming                 |
| LC01           | 4822 153 70064 | Choke Coil 8mH                            | RM11           | 4822 100 11351 | 10K Ω (B), Trimming                 |
| LC02           | 4822 153 70064 | Choke Coil 8mH                            | RU81           | 4822 111 92145 | 10K Ω x 5, Array                    |
| LD01           | 4822 153 70064 | Choke Coil 8mH                            | RU82           | 4822 111 92145 | 10K Ω x 5, Array                    |
| LD02           | 4822 153 70064 | Choke Coil 8mH                            | RU83           | 4822 111 92144 | 10K Ω x 8, Array                    |
| LE01           | 4822 148 81318 | Bias OSC 80KHz                            | RU84           | 4822 111 92145 | 10K Ω x 5, Array                    |
| LE02           | 4822 148 81319 | Erase OSC 80KHz                           | RU85           | 4822 111 92146 | 10K Ω x 4, Array                    |
| LE03           | 4822 153 70064 | Choke Coil 8mH                            | RU86           | 4822 111 92145 | 10K Ω x 5, Array                    |
| LE04           | 4822 153 70064 | Choke Coil 8mH                            |                |                | <b>PU00-SEMICONDUCTORS</b>          |
| LF01           | 4822 148 81318 | Bias OSC 80KHz                            | DM01           | 4822 130 32816 | Diode 1SR35-200A                    |
| LF02           | 4822 148 81319 | Erase OSC 80KHz                           | DM02           | 4822 130 32816 | Diode 1SR35-200A                    |
| LF03           | 4822 153 70064 | Choke Coil 8mH                            | DM03           | 4822 130 32816 | Diode 1SR35-200A                    |
| LF04           | 4822 153 70064 | Choke Coil 8mH                            | DU11           | 4822 130 32778 | Diode 1SS133                        |
| LG01           | 4822 148 81318 | Bias OSC 80KHz                            | DU31           | 4822 130 32778 | Diode 1SS133                        |
| LG02           | 4822 148 81319 | Erase OSC 80KHz                           | DU34           | 4822 130 32778 | Diode 1SS133                        |
| LG03           | 4822 153 70064 | Choke Coil 8mH                            | DU51           | 4822 130 32778 | Diode 1SS133                        |
| LG04           | 4822 153 70064 | Choke Coil 8mH                            | DU52           | 4822 130 32778 | Diode 1SS133                        |
| LJ01           | 4822 148 81318 | Bias OSC 80KHz                            | QM01           | 4822 130 61525 | Transistor, Digital DTC124EF        |
| LJ02           | 4822 148 81319 | Erase OSC 80KHz                           | QM02           | 4822 130 63285 | Transistor, Digital 2SD1994A        |
| LJ03           | 4822 153 70064 | Choke Coil 8mH                            | QM03           | 4822 130 61525 | Transistor, Digital DTC124EF        |
| LJ04           | 4822 153 70064 | Choke Coil 8mH                            | QM04           | 4822 130 63285 | Transistor, Digital 2SD1994A        |
| LL01           | 4822 157 70494 | Choke Coil 1.2mH                          | QM05           | 4822 130 61525 | Transistor, Digital DTC124EF        |
| LL02           | 4822 148 81321 | Bias OSC 80KHz                            | QM06           | 4822 130 63286 | Transistor, Digital 2SD1266A        |
| L901           | 4822 148 81319 | Erase OSC 80KHz                           | QM07           | 4822 130 61525 | Transistor, Digital DTC124EF        |
| L902           | 4822 157 70495 | Choke Coil 330µH                          | QM08           | 4822 130 61525 | Transistor, Digital DTC124EF        |
| L903           | 4822 157 70495 | Choke Coil 330µH                          | QM09           | 4822 209 82279 | Transistor, Digital DTA124EF        |
|                |                |   | QM10           | 4822 130 63281 | FET 2SK362-BL                       |
|                |                |   | QM11           | 4822 130 63281 | FET 2SK362-BL                       |
|                |                |   | QM12           | 4822 130 63281 | FET 2SK362-BL                       |
|                |                | <b>PS00-KEY SW/ DISPLAY CIRCUIT BOARD</b> | QR01           | 4822 130 43794 | Transistor, Digital 2SC1815 (Y, GR) |
|                |                |   | QR04           | 4822 209 12553 | IC TC74HC240                        |
|                |                | <b>PS00-SEMICONDUCTORS</b>                | QR05           |                |                                     |
| DS01           | 4822 130 83371 | L.E. D. LT9200D (RED)                     | QU01           | 4822 209 32318 | Microprocessor HD614081S            |
| DS02           | 4822 130 83371 | L.E. D. LT9200D (RED)                     | QU02           | 4822 209 82279 | Transistor, Digital DTA124EF        |
| DS03           | 4822 130 82964 | L. E. D. GL3KG8 (GRN)                     | QU03           | 4822 209 82285 | Transistor, Digital DTA124EF        |
| DS06           | 4822 130 82955 | L. E. D. GL3PR8 (RED)                     | QU11           | 4822 130 61525 | Transistor, Digital DTC124EF        |
| DS07           | 4822 130 80325 | L. E. D. GL3AY8 (YEL)                     | QU12           | 4822 130 63279 | Transistor, Digital DTC143EF        |
| DS09           | 4822 130 82964 | L. E. D. GL3KG8 (GRN)                     | QU13           | 4822 130 61525 | Transistor, Digital DTC124EF        |
| DS12           | 4822 130 82159 | L. E. D. GL3ED8 (RED/ GRN)                | QU15           | 4822 130 61525 | Transistor, Digital DTC124EF        |
| DS13           | 4822 130 82159 | L. E. D. GL3ED8 (RED/ GRN)                | QU41           | 4822 130 61525 | Transistor, Digital DTC124EF        |
| DT01           | 4822 130 32778 | Diode 1SS133                              | QU44           | 4822 130 61525 | Transistor, Digital DTC124EF        |
| DT15           | 4822 130 83372 | L. E. D. LA-401DN (ORG) 7SEG              | QU51           | 4822 130 61525 | Transistor, Digital DTC124EF        |
| DT21           | 4822 130 83372 | L. E. D. LA-401DN (ORG) 7SEG              | QU53           | 4822 130 61525 | Transistor, Digital DTC124EF        |
| DT24           | 4822 130 83372 | L. E. D. LA-401DN (ORG) 7SEG              | QU54           | 4822 130 61525 | Transistor, Digital DTC124EF        |
|                |                |   |                |                | <b>PU00-MISCELLANEOUS</b>           |
| SA01           | 4822 276 13399 | Switch Tact                               | LU01           | 4822 157 70493 | Filter EXC-EMT271BT                 |
| SA15           | 4822 276 13399 |   | LU02           | 4822 157 70493 | Filter EXC-EMT271BT                 |
|                |                |   | LU11           | 4822 280 20532 | Relay MZ-12HG                       |
|                |                |   | XU01           | 4822 242 81466 | Crystal 4MHz                        |

| REF.<br>DESIG.   | PART NO.   | DESCRIPTION  |
|--|--|--|
| JV41<br>~<br>JV46<br>JV51<br>~<br>JV54                                       | 4822 267 31499<br>4822 267 31643   | PV00-INPUT JACK CIRCUIT BOARD<br>Jack, CH1-CH6<br>Jack, Insert CH1-CH4   |
| RV90   | 4822 101 30817   | PV01-XLR JACK CIRCUIT BOARD<br>Variable Resistor 10K Ω (A) x 2   |
| JV81<br>~<br>JV84  | 4822 267 31645   | Jack, Cannon; Mic/ Line  |
| CW01<br>~<br>CW05  | 4822 124 21903   | PW00-OUTPUT/ INPUT JACK CIRCUIT BOARD<br>PW00-CAPACITORS<br>Elect 1μF 50V  |
| QW01<br>~<br>QW05  | 4822 130 63284   | PW00-MISCELLANEOUS<br>Transistor 2SC3327A  |
| JW41<br>JW51<br>JW52<br>JW53<br>JW53<br>JW61<br>JW71<br>JW72<br>JW81<br>JW82 | 4822 290 81588<br>4822 290 81589<br>4822 290 81589<br>4822 290 81589<br>4822 290 81589<br>4822 290 81589<br>4822 267 31499<br>4822 267 31499<br>4822 267 31499<br>4822 267 31499 | Jack, RCA; 2P RED / WHT<br>Jack, RCA; 2P BLK<br>Jack, RCA; 2P BLK<br>Jack, RCA; 2P BLK<br>Jack, RCA; 2P BLK<br>Jack, EFF, RTN (L/Mono)<br>Jack, EFF, RTN (R)<br>Jack, EFF, SEND<br>Jack, Tape CUE Out  |
| CX91   | 4822 124 80515   | PX00-METER CIRCUIT BOARD<br>PX00-CAPACITORS<br>Elect 22μF 10V  |
| RX12<br>RX22<br>RX32<br>RX42   | 4822 100 11372<br>4822 100 11372<br>4822 100 11372<br>4822 100 11372   | PX00-RESISTORS<br>47KΩ (B), Trimming; Meter 1<br>47KΩ (B), Trimming; Meter 2<br>47KΩ (B), Trimming; Meter 3<br>47KΩ (B), Trimming; Meter 4   |
| DX11<br>DX21<br>DX31<br>DX41<br>DX91   | 4822 130 32778<br>4822 130 32778<br>4822 130 32778<br>4822 130 32778<br>4822 130 32778   | PX00-SEMICONDUCTORS<br>Diode 1SS133<br>Diode 1SS133<br>Diode 1SS133<br>Diode 1SS133<br>Diode 1SS133  |
| DZ11<br>DZ12<br>DZ21<br>DZ22<br>DZ31<br>DZ32<br>DZ41<br>DZ42                 | 4822 130 82159<br>4822 130 82159                                     | L. E. D. GL3ED8 (RED/ GRN)<br>L. E. D. GL3ED8 (RED/ GRN) |

| REF.<br>DESIG.   | PART NO.   | DESCRIPTION  |
|--|--|--|
| QX11<br>QX12<br>QX13<br>QX21<br>QX22<br>QX23<br>QX31<br>QX32<br>QX33<br>QX41<br>QX42<br>QX43                 | 4822 130 42431<br>4822 130 42431<br>4822 130 61525<br>4822 130 42431<br>4822 130 42431<br>4822 130 61525<br>4822 130 42431<br>4822 130 61525<br>4822 130 61525<br>4822 130 42431<br>4822 130 42431<br>4822 130 61525                                     | Transistor 2SC1740S (R, S)<br>Transistor 2SC1740S (R, S)<br>Transistor, Digital DTC124EF<br>Transistor 2SC1740S (R, S)<br>Transistor 2SC1740S (R, S)<br>Transistor, Digital DTC124EF<br>Transistor 2SC1740S (R, S)<br>Transistor 2SC1740S (R, S)<br>Transistor, Digital DTC124EF<br>Transistor 2SC1740S (R, S)<br>Transistor 2SC1740S (R, S)<br>Transistor, Digital DTC124EF                 |
| QZ11<br>QZ12<br>QZ13<br>QZ21<br>QZ22<br>QZ23<br>QZ31<br>QZ32<br>QZ33<br>QZ41<br>QZ42<br>QZ43                 | 4822 130 61525<br>4822 209 82279<br>4822 209 82279<br>4822 130 61525<br>4822 209 82279<br>4822 209 82279<br>4822 130 61525<br>4822 209 82279<br>4822 209 82279<br>4822 130 61525<br>4822 209 82279<br>4822 209 82279                                     | Transistor, Digital DTC124EF<br>Transistor, Digital DTA124EF<br>Transistor, Digital DTA124EF<br>Transistor, Digital DTC124EF<br>Transistor, Digital DTA124EF<br>Transistor, Digital DTA124EF<br>Transistor, Digital DTC124EF<br>Transistor, Digital DTA124EF<br>Transistor, Digital DTA124EF<br>Transistor, Digital DTC124EF<br>Transistor, Digital DTA124EF<br>Transistor, Digital DTA124EF |
| MI10<br>MI20<br>MI30<br>MI40   | 4822 345 31002<br>4822 345 31002<br>4822 345 31002<br>4822 345 31002   | PX00-MISCELLANEOUS<br>D.C. Meter 200-S19-236<br>D.C. Meter 200-S19-236<br>D.C. Meter 200-S19-236<br>D.C. Meter 200-S19-236   |
| CK03<br>CK04   | 4822 122 32486<br>4822 122 32486   | P700-MIXER AMP VOIUME CIRCUIT BOARD<br>P700-CAPACITORS   |
| C103<br>C115<br>C136<br>C137<br>C203<br>C215<br>C236<br>C237<br>C303<br>C315                                 | 4822 122 32486<br>4822 122 32486<br>4822 121 70219<br>4822 121 70219<br>4822 122 32486<br>4822 122 32486<br>4822 121 70219<br>4822 121 70219<br>4822 122 32486<br>4822 122 32486   | Ceramic 0.01μF +80% -20%<br>Ceramic 0.01μF +80% -20%<br>Ceramic 0.01μF +80% -20%<br>Film 8200pF ±5%<br>Film 8200pF ±5%<br>Ceramic 0.01μF +80% -20%<br>Ceramic 0.01μF +80% -20%<br>Film 8200pF ±5%<br>Film 8200pF ±5%<br>Ceramic 0.01μF +80% -20%<br>Ceramic 0.01μF +80% -20%   |
| C336<br>C337<br>C403<br>C415<br>C436<br>C437<br>C515   | 4822 121 70219<br>4822 121 70219<br>4822 122 32486<br>4822 122 32486<br>4822 121 70219<br>4822 121 70219<br>4822 122 32486   | Film 8200pF ±5%<br>Film 8200pF ±5%<br>Ceramic 0.01μF +80% -20%<br>Ceramic 0.01μF +80% -20%<br>Film 8200pF ±5%<br>Film 8200pF ±5%<br>Ceramic 0.01μF +80% -20%   |
| RN00<br>RN30<br>RN55<br>RN70<br>RN80<br>RN98<br>RN99   | 4822 101 30816<br>4822 101 30811<br>4822 101 30811<br>4822 101 30816<br>4822 101 30816<br>4822 052 11339<br>4822 052 11339   | P700-RESISTORS<br>10K Ω (A) x 2, Variable<br>10K Ω (A), Variable<br>10K Ω (A), Variable<br>10K Ω (A) x 2, Variable<br>10K Ω (A) x 2, Variable<br>3.3 Ω NF ±5% 1/2W<br>3.3 Ω NF ±5% 1/2W  |
| R110<br>R120<br>R140<br>R150<br>R160<br>R165<br>R180<br>R185<br>R210<br>R220<br>R240<br>R250<br>R260<br>R265 | 4822 101 30812<br>4822 101 30822<br>4822 101 30813<br>4822 101 30818<br>4822 101 30815<br>4822 101 30815<br>4822 101 30814<br>4822 101 30811<br>4822 101 30812<br>4822 101 30822<br>4822 101 30813<br>4822 101 30818<br>4822 101 30815<br>4822 101 30815 | 10K Ω (C), Variable<br>50K Ω (A), Variable<br>100K Ω (B), Variable<br>100K Ω (C) x 2, Variable<br>50K Ω (B), Variable<br>50K Ω (B), Variable<br>5K Ω (B), Variable<br>10K Ω (A), Variable<br>10K Ω (C), Variable<br>50K Ω (A), Variable<br>100K Ω (B), Variable<br>100K Ω (C), Variable<br>50K Ω (B), Variable<br>50K Ω (B), Variable  |

| REF.<br>DESIG. | PART NO.       | DESCRIPTION              | REF.<br>DESIG. | PART NO.       | DESCRIPTION                   |
|----------------|----------------|--------------------------|----------------|----------------|-------------------------------|
| R280           | 4822 101 30814 | 5K Ω (B), Variable       | S302           | 4822 277 21686 | Switch, Slide Input CH3       |
| R285           | 4822 101 30811 | 10K Ω (A), Variable      | S303           | 4822 276 13401 | Switch, Push Mid-EQ CH3       |
| R310           | 4822 101 30812 | 10K Ω (C), Variable      | S401           | 4822 276 13401 | Switch, Push XLR CH3          |
| R320           | 4822 101 30822 | 50K Ω (A), Variable      | S402           | 4822 277 21686 | Switch, Slide Input CH4       |
| R340           | 4822 101 30813 | 100K Ω (B), Variable     | S403           | 4822 276 13401 | Switch, Push Mid-EQ CH4       |
| R350           | 4822 101 30818 | 100K Ω (C) x 2, Variable | S502           | 4822 277 21686 | Switch, Slide Direct CH5      |
| R360           | 4822 101 30815 | 50K Ω (B), Variable      | S602           | 4822 277 21686 | Switch, Slide Direct CH6      |
| R365           | 4822 101 30815 | 50K Ω (B), Variable      |                |                | P800-CUE VOLUME CIRCUIT BOARD |
| R380           | 4822 101 30814 | 5K Ω (B), Variable       |                |                | P800-CAPACITORS               |
| R385           | 4822 101 30811 | 10K Ω (A), Variable      | CY07           | 4822 122 32486 | Ceramic 0.01μF +80% -20%      |
| R410           | 4822 101 30812 | 10K Ω (C), Variable      | C802           | 4822 122 32486 | Ceramic 0.01μF +80% -20%      |
| R420           | 4822 101 30822 | 50K Ω (A), Variable      | C805           | 4822 122 32486 | Ceramic 0.01μF +80% -20%      |
| R440           | 4822 101 30813 | 100K Ω (B), Variable     | C806           | 4822 122 32486 | Ceramic 0.01μF +80% -20%      |
| R450           | 4822 101 30818 | 100K Ω (C) x 2, Variable | C808           | 4822 122 32486 | Ceramic 0.01μF +80% -20%      |
| R460           | 4822 101 30815 | 50K Ω (B), Variable      | C809           | 4822 122 32486 | Ceramic 0.01μF +80% -20%      |
| R465           | 4822 101 30815 | 5K Ω (B), Variable       | C823           | 4822 124 23112 | Elect (B. P.) 10μF 16V        |
| R480           | 4822 101 30814 | 10K Ω (A), Variable      | C824           | 4822 124 23112 | Elect (B. P.) 10μF 16V        |
| R485           | 4822 101 30811 | 10K Ω (C), Variable      |                |                | P800-RESISTORS                |
| R510           | 4822 101 30812 | 10K Ω (B), Variable      | RY05           | 4822 101 30821 | 10K Ω (B), Variable           |
| R520           | 4822 101 30822 | 50K Ω (A), Variable      | RY11           | 4822 101 30811 | 10K Ω (A), Variable           |
| R560           | 4822 101 30815 | 50K Ω (B), Variable      | RY21           | 4822 101 30811 | 10K Ω (A), Variable           |
| R565           | 4822 101 30815 | 50K Ω (B), Variable      | RY31           | 4822 101 30811 | 10K Ω (A), Variable           |
| R580           | 4822 101 30814 | 5K Ω (B), Variable       | RY41           | 4822 101 30811 | 10K Ω (A), Variable           |
| R585           | 4822 101 30811 | 10K Ω (A), Variable      |                |                | P800-SEMICONDUCTORS           |
| R610           | 4822 101 30812 | 10K Ω (C), Variable      | DY01           | 4822 130 82955 | L. E. D. GL3PR8 (RED)         |
| R620           | 4822 101 30822 | 50K Ω (A), Variable      | DY08           |                |                               |
| R660           | 4822 101 30815 | 50K Ω (B), Variable      | D821           | 4822 130 32778 | Diode 1SS133                  |
| R665           | 4822 101 30815 | 50K Ω (B), Variable      | D822           | 4822 130 32778 | Diode 1SS133                  |
| R680           | 4822 101 30814 | 5K Ω (B), Variable       | QY01           | 4822 209 32315 | IC NJM2068L-D                 |
| R685           | 4822 101 30811 | 10K Ω (A), Variable      | QY02           | 4822 209 82569 | IC TC4066BP                   |
| R720           | 4822 101 30819 | 10K Ω (A) x 2, Variable  | QY03           | 4822 209 82569 | IC TC4066BP                   |
|                |                | P700-SEMICONDUCTORS      | Q801           | 4822 209 32317 | IC μPC2409HF                  |
| QK01           | 4822 209 32315 | IC NJM2068L-D            | Q802           | 4822 209 61847 | IC NJM78M05FA                 |
| QK02           | 4822 209 32315 | IC NJM2068L-D            | Q803           | 4822 209 71373 | IC NJM78L05A                  |
| QN01           | 4822 209 32315 | IC NJM2068L-D            | Q821           | 4822 209 82279 | Transistor, Digital DTA124EF  |
| QN02           | 4822 209 32316 | IC NJM2073S              | Q822           | 4822 130 42961 | Transistor 2SA1015            |
| QN03           | 4822 209 32316 | IC NJM2073S              | Q823           | 4822 130 61525 | Transistor, Digital DTC124EF  |
| QN31           | 4822 209 32315 | IC NJM2068L-D            | Q824           | 4822 209 82279 | Transistor, Digital DTA124EF  |
| QN51           | 4822 209 32315 | IC NJM2068L-D            |                |                | P800-MISCELLANEOUS            |
| Q101           | 4822 209 32315 | IC NJM2068L-D            | SY01           | 4822 277 21688 | Switch, Slide                 |
| Q104           | 4822 130 63281 | F. E. T. 2SK362-BL       | SY04           | 4822 277 21687 | Switch, Slide                 |
| Q105           | 4822 209 32315 | IC NJM2068L-D            | SY05           | 4822 277 21687 | Switch, Slide                 |
| Q201           | 4822 209 32315 | IC NJM2068L-D            |                |                |                               |
| Q204           | 4822 209 32315 | F. E. T. 2SK362-BL       |                |                |                               |
| Q205           | 4822 130 63281 | F. E. T. 2SK362-BL       |                |                |                               |
| Q301           | 4822 209 32315 | IC NJM2068L-D            |                |                |                               |
| Q304           | 4822 209 32315 | IC NJM2068L-D            |                |                |                               |
| Q305           | 4822 130 63281 | F. E. T. 2SK362-BL       |                |                |                               |
| Q306           | 4822 209 32315 | IC NJM2068L-D            |                |                |                               |
| Q401           | 4822 209 32315 | IC NJM2068L-D            |                |                |                               |
| Q404           | 4822 130 63281 | F. E. T. 2SK362-BL       |                |                |                               |
| Q405           | 4822 209 32315 | IC NJM2068L-D            |                |                |                               |
| Q501           | 4822 209 32315 | IC NJM2068L-D            |                |                |                               |
| Q504           | 4822 209 32315 | IC NJM2068L-D            |                |                |                               |
| Q604           | 4822 209 32315 | IC NJM2068L-D            |                |                |                               |
| Q701           | 4822 209 32315 | IC NJM2068L-D            |                |                |                               |
| Q702           | 4822 209 32315 | IC NJM2068L-D            |                |                |                               |
|                |                | P700-MISCELLANEOUS       |                |                |                               |
| SK01           | 4822 277 21687 | Switch, Slide Sync       |                |                |                               |
| SN01           | 4822 277 21686 | Switch, Slide Input      |                |                |                               |
| SN02           | 4822 277 21687 | Switch, Slide Meter      |                |                |                               |
| SN03           | 4822 277 21687 | Switch, Slide DBX        |                |                |                               |
| S101           | 4822 276 13401 | Switch, Push XLR CH1     |                |                |                               |
| S102           | 4822 277 21686 | Switch, Slide Input CH1  |                |                |                               |
| S103           | 4822 276 13401 | Switch, Push Mid-EQ CH1  |                |                |                               |
| S201           | 4822 276 13401 | Switch, Push XLR CH2     |                |                |                               |
| S202           | 4822 277 21686 | Switch, Slide Input CH2  |                |                |                               |
| S203           | 4822 276 13401 | Switch, Push Mid-EQ CH2  |                |                |                               |
| S301           | 4822 276 13401 | Switch, Push XLR CH3     |                |                |                               |

NOTE ON SAFETY :

Symbol ▲ Fire or electrical shock hazard. Only original parts should be used to replace any part marked with symbol ▲. Any other component substitution (other than original type), may increase risk of fire or electrical shock hazard.